

CANMET

REPORT 80-15

Canada Centre
for Mineral
and Energy
Technology

Centre canadien
de la technologie
des minéraux
et de l'énergie

CATALOGUE DES PUBLICATIONS DE CANMET 1979/80

PROGRAMMES DE RECHERCHE SUR LES MINÉRAUX ET L'ÉNERGIE
DIVISION DE L'INFORMATION TECHNOLOGIQUE



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Resources Canada

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CATALOGUE DES PUBLICATIONS DE CANMET 1979/80

Publications et documents publiés ou présentés par le personnel scientifique et technique de CANMET en 1979/80.

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Version française traduite par J. Collins-DeCotret

PROGRAMMES DE RECHERCHE SUR LES MINÉRAUX ET
L'ÉNERGIE

DIVISION DE L'INFORMATION TECHNOLOGIQUE

RAPPORT DE CANMET 80-15

Novembre 1980

AVANT-PROPOS

Le présent catalogue est une compilation des publications et des rapports préparés par le personnel scientifique et technique de CANMET en 1979/80 ainsi que les rapports de recherche effectuée à contrat par des agences extérieures pour le CANMET. Au début de chacune des sections, on retrouve les renseignements nécessaires sur la façon de se procurer ces publications. Il contient aussi un répertoire des auteurs et des sujets.

La Section 1 contient les titres et les résumés des principaux rapports de la série des rapports de CANMET destinés à la distribution générale et la vente.

La Section 2 comprend les rapports, accompagnés de résumés, qui ont été préparés dans le but d'être publiés dans les périodiques de l'extérieur.

La Section 3 énumère les communications présentées aux diverses conférences.

La Section 4 énumère les rapports de division et les rapports déclassifiés qui fournissent les résultats des études effectuées à la demande de l'industrie ou autres agences gouvernementales ainsi que celles qui sont initiées par le CANMET.

La Section 5 contient les rapports préparés à contrat pour le CANMET par des agences de recherche privées. Ils traitent des études effectuées sur les ressources minérales nationales et l'approvisionnement et la technologie de l'énergie.

La Section 6 énumère les rapports qui décrivent les recherches effectuées par les agences extérieures et parrainées par le CANMET.

James E. Kanasy
Chef
Division de l'information technologique



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SECTION 1

RAPPORTS DE CANMET

Les rapports suivants sont disponibles aux prix indiqués en s'adressant soit à la Direction de l'imprimerie et de l'édition, Approvisionnement et Services Canada, Ottawa, K1A 0S9 ou à la Section des ventes et de la distribution des publications du CANMET, Energie, Mines et Ressources Canada, 555, rue Booth, Ottawa, K1A 0G1. Vous pouvez vous procurer des copies sur microfiches en vous adressant à Micromedia Limited, C.P. 502, Station S, Toronto, Canada, H5M 4L8.

001

RAPPORT DE CANMET 78-1. Misener, D.C. "Sommaires of CANMET research contracts 1975-1978"

Il s'agit d'une compilation des comptes rendus sommaires des travaux de R & D effectués à contrat pour le CANMET en vertu de la politique d'adjudication de contrats du gouvernement.

N°cat. M38-13/78-1 - 48 p
Canada \$1.25; autres pays \$1.50

002

RAPPORT DE CANMET 78-7. Knight, G. "Mine dust sampling system - CAMPEDS"

Un compte rendu est donné des travaux expérimentaux effectués au Laboratoire d'Elliot Lake du CANMET sur la mise au point d'une méthode d'échantillonnage de la poussière dans les mines en employant l'évaluation gravimétrique et l'analyse par diffraction des rayons X pour le quartz.

N°cat. M38-13/78-7 - 107 p
Canada \$3.50; autres pays \$4.20

003

RAPPORT DE CANMET 78-12F. "Revue de CANMET 1977/78"

Dans cette revue, on énumère les réalisations du personnel de CANMET pour l'année 1977/78 dans le cadre du Programme de recherche minière et du Programme de recherche énergétique du Ministère.

N°cat. M38-13/78-12F - 64 p
Canada \$2.25; autres pays \$2.70

004

RAPPORT DE CANMET 78-17. Bartlett, G. et Coates, D.F. "Pit slope project - A case study of contracting-out"

Une analyse détaillée est présentée du rendement de la recherche en employant le projet sur la pente des mines à ciel ouvert comme modèle de R & D divers effectués à contrat. Cette étude a conduit à la recommandation d'un procédé comparable qui ensemble avec les directives du Conseil du Trésor, détermineront le rendement de la recherche effectuée sur place ou à contrat.

N°cat. M38-13/78-17
Canada \$1.00; autres pays \$1.20

005

RAPPORT DE CANMET 78-18. "Catalogue des publications du CANMET 1977/78" (Anglais et français)

Ce rapport consiste d'une compilation des publications publiées ou présentées par le personnel scientifique et technique du CANMET. La Section 1 énumère les publications, accompagnées de résumés, ayant fait l'objet d'une distribution générale et vendus. La Section 2 présente les rapports suivis du résumé ayant été publiés dans les périodiques externes ou qui leur ont été soumis, ou qui ont été présentés à diverses conférences. Dans la Section 3 se trouvent les rapports de division et de programme. La Section 4 contient une liste des rapports préparés par des agences de recherche privées soumissionnées par CANMET et ayant effectué des études sur les ressources minérales, l'approvisionnement en énergie et la technologie au niveau national.

N°cat. M38-13/78-18 - 74 p
Canada \$6.00; autres pays \$7.20

006

RAPPORT DE CANMET 78-21. Bell, K.E., Brady, J.G. et Zengals, L.K. "Ceramic clays and shales of the Atlantic Provinces"

Des échantillons types des argiles et des schistes argileux retrouvés dans la région de l'Atlantique ont été étudiés pour en déterminer la composition et les propriétés céramiques. Les résultats et la discussion donnés ainsi que ceux retrouvés dans des rapports précédents sur la Colombie-Britannique, l'Ontario et le Québec forment une base de connaissances nécessaire pour assurer le développement méthodique et efficace de l'industrie de la céramique au Canada.

N°cat. M38-13/78-21 - 89 p
Canada \$3.00; autres pays \$3.60

007

RAPPORT DE CANMET 78-23. Petruk, W. "Image analysis study of mill products from batch tests on Brunswick Mining and Smelting tailings"

On a effectué une étude par l'analyse de l'image afin de déterminer le comportement de la sphalerite pendant les essais en laboratoire sur la récupération du zinc d'un échantillon de stériles contenant 1.8% en poids de zinc et provenant de l'usine Brunswick Mining and Smelting. Le présent rapport résume les données sur l'analyse de l'image, donne une interprétation du comportement de la sphalerite et fait l'extrapolation des résultats afin de prédire la récupération ultime

possible du zinc.

N°cat. M38-13/78-23 - 12 p
Canada \$1.25; autres pays \$1.50

008

RAPPORT DE CANMET 78-28. Hedley, D.G.F. "Canadian base metal mining in the 1970's"

Ce rapport donne une résumé de l'industrie de l'exploitation des métaux communs. On y retrouve l'information sur les sources de production, les méthodes d'exploitation, le nombre et la dimension des mines, les données sur la main d'oeuvre, les coûts et la productivité.

N°cat M38-13/78-28 - 11 p
Canada \$1.25; autres pays \$1.50

009

RAPPORT DE CANMET 78-30. Grandsden, J.F., Price, J.T. et Ramey, N.J. "Reduction rates of iron ore-char briquets used in cupola smelting"

Le CANMET a récemment examiné le potentiel des gisements de fer de Peace River comme source de fer pour l'industrie sidérurgique de l'Ouest du Canada. Une des méthodes conventionnelles de fabrication du fer analysée est la fusion des briquettes de minerai de fer carbonisé dans un cubilot. Le présent rapport décrit le comportement de réduction des briquettes ainsi déterminé par les expériences effectuées en laboratoire.

N°cat. M38-13/78-30 - 15 p
Canada \$1.25; autres pays \$1.50

010

RAPPORT DE CANMET 79-1. Raicevic, D. et Noblitt, H.L. "Tantalum and niobium ore dressing investigations at CANMET"

Le tantale et le niobium sont décrits en fonction de leurs propriétés, usages et ressources soit domestiques ou mondiales. Les statistiques sur la production et sur la consommation sont données pour les deux métaux. Les annexes consistent de courts résumés des études effectuées à CANMET sur le traitement des minéraux en ce qui a trait à la minéralogie et à la concentration des minerais canadiens. Elles couvrent aussi la recherche effectuée sur les minéraux de niobium étrangers qui semble intéressante pour le traitement du minerai domestique.

N°cat. M38-13/79-1 - 66 p
Canada \$3.85; autres pays \$4.65

011

RAPPORT DE CANMET 79-2. Wheat, T.A. "Synthesis and characterization of zirconia electrolytes for potential use in energy conversion systems"

Une étude a été entreprise dans le cadre d'un programme pour mettre au point des matériaux conducteurs ioniques susceptibles d'être employés dans l'emmagasinage de l'énergie et les systèmes de conversion pour déterminer la stabilité de diverses compositions dans le système CaO-ZrO₂ pour les piles à combustibles et les applications GMH. Le présent rapport présente les aspects microstructuraux de la synthèse des poudres et le développement des matériaux frittés.

N°cat. M38-13/79-2 - 28 p
Canada \$1.75; autres pays \$2.10

012

RAPPORT DE CANMET 79-3. Bowman, W.S., Faye, G.H., Sutarno, R., McKeague, J.A. et Kodama, H. "Soil sample S0-1, S0-2, S0-3 et S0-4 - Certified reference materials"

Ce rapport décrit la préparation, caractérisation et homologation de quatre échantillons de sol pour l'usage comme matériaux de référence certifiés. Les échantillons ont été homologués pour le Al, Fe, Mn, K, Zn, Cu, Cr et Pb et un ou plus ont été homologués pour le Si, Na, Mg, Ca, P, Ti, Hg, Ni, Sr et V.

N°cat. M38-13/79-3 - 32 p
Canada \$1.75; autres pays \$2.10

013

RAPPORT DE CANMET 79-4. Faye, G.H., Bowman, W.S. et Sutarno, R. "Uranium ore BL-5 - A certified reference material"

Un minerai d'uranium BL-5 a été préparé comme matériau de référence de composition. Dans un programme de "libre choix" de certification, 27 laboratoires ont fourni les résultats analytiques; une analyse statistique des données a permis de trouver une valeur de $7.09 \pm 0.03\%$. On y retrouve aussi des renseignements sur l'état d'équilibre radioactif du BL-5 et sa teneur de Ra-226, Pb-210 et Th-230.

N°cat. M38-13/79-4 - 11 p
Canada \$1.25; autres pays \$1.50

014

RAPPORT DE CANMET 79-5. Kim, C., Wolff, S.F., Baafi, E.Y. et Cervantes, J.A. "Optimization of coal recovery from open pits"

Les techniques de conception du manuel sur la pente des mines à ciel ouvert en 25 volumes ont été appliquées avec succès dans un étude de cas d'un gisement à couches multiples à paroi abrupte exploité à l'aide d'une combinaison camion-pelle. Un analyse des coûts-bénéfices est donné pour trois concepts de mines à ciel ouvert différents ayant des pentes de 45°, 28° et 35°.

N°cat. M38-13/79-5 - 175 p
Canada \$11.75; autres pays \$14.10

015

RAPPORT DE CANMET 79-6. White, D.W.G. et Winter-ton, K. (réédacteurs) "Heat-affected-zone toughness of welded joints in micro-alloy steels"

Des travaux ont été effectués pour évaluer les effets de la composition chimique et la vitesse de refroidissement sur la résilience d'entaille de la zone affectée thermiquement des plaques soudées d'acier micro-allié. Le rapport donne les résultats des essais de résilience mesurés, les descriptions des caractéristiques de transformation du refroidissement continu, l'analyse métallographique des microstructure des zones affectées thermiquement et les effets de la précipitation. L'annexe comprend les courbes de transition individuelles pour les huit aciers expérimentaux soudés à 5 niveaux calorifiques différents et 16 courbes se rapportant aux conditions de relaxation des contraintes.

N°cat. M38-13/79-6 - 107 p
Canada \$5.75; autres pays \$6.90

016

RAPPORT DE CANMET 79-7. Tibbetts, T.E., Montgomery, W.J. et Faurschou, D.K. "Analysis directory of Canadian commercial coals - Supplement N° 3"

Les analyses chimiques et physiques sont données des charbons thermiques et métallurgiques provenant actuellement de mines de la Nouvelle-Ecosse, du Nouveau-Brunswick, de la Saskatchewan, l'Alberta et la Colombie-Britannique.

N°cat. M38-13/79-7 - 81 p

Canada \$4.00; autres pays \$4.80

017

RAPPORT DE CANMET 79-8. Stemerowicz, A.I. et Leigh, G.W. "Flotation techniques for producing high-recovery bulk Zn-Pb-Cu-Ag concentrate from a New Brunswick massive sulphide ore"

Le présent rapport décrit une étude entreprise afin de mettre au point une technique de flottation en vrac pour la production de concentrés en vrac de zinc-plomb-cuivre-argent ayant une pureté cible de 30% de zinc avec la plus grande récupération possible. L'alimentation contenant 8,73% zino, 3,95% plomb, 0,24% cuivre et 87,8 g/t argent a produit un concentré en vrac ayant une pureté de 30,0% zinc, 10,75% plomb, 0,68% cuivre et 246,9 g/t argent avec des récupérations de 95,3, 86,6, 76,7 et 84,6% respectivement.

N°cat. M38-13/79-8 - 94 p

Canada \$8.00; autres pays \$9.60

018

RAPPORT DE CANMET 79-9. Prud'homme, P. et Lucas, B.H. "Construction and operation of a continuous ion-exchange pilot plant using fluidized-bed columns"

La mise au point d'un nouvel équipement simplifié d'échange d'ions pour la récupération de métaux en solution y est décrite. Il consiste en une colonne d'extraction d'un étage à profond lit fluidisé couplée à des colonnes d'élution et de lavage à lit mobile pour l'extraction de différents ions contenus dans des solutions d'eau de mine et des liqueurs de lixiviation. Une procédure pour parvenir à l'utilisation convenable des conditions optimales d'opération pour cette installation pilote a été mise au point.

N°cat. M38-13/79-9 - 10 p

Canada \$1.25; autres pays \$1.50

019

RAPPORT DE CANMET 79-10. Wilson, H.S. "A comparative study of lightweight aggregates in structural concrete"

Les résultats sont donnés d'une étude des propriétés physiques de cinq agrégats légers produits commercialement au Canada à partir des argiles et de schistes argileux et des propriétés des bétons structuraux dans lesquels on incorpore ces agrégats légers. Les échantillons ont été préparés, traités et mis à l'essai en respectant les normes de l'ASTM.

N°cat. M38-13/79-10 - 25 p

Canada \$2.00; autres pays \$2.40

020

RAPPORT DE CANMET 79-11. Hedley, D.G.F., Herget,

G., Miles, P. et Yu, Y.S. "CANMET'S rock mechanics research at the Kidd Creek mine"

Ce rapport décrit les techniques de mesure et leurs applications, compare les déformations et les contraintes mesurées et prédictes et évalue les modes possibles de défaillance à la mine de Kidd Creek au nord de l'Ontario. Une annexe décrit le système de contrôle dans la mine à ciel ouvert.

N°cat. M38-13/79-10 - 52 p

Canada \$3.50; autres pays \$4.20

021

RAPPORT DE CANMET 79-12. Hayden, A.C. et Brown, T.D. "Energy cascades in Canada"

Trois importantes applications pour lesquelles le principe des cascades a été plus avantageux du point de vue conservation du carburant et des coûts que les systèmes conventionnels sont démontrées par: (1) un cycle combiné de cascade d'énergie; (2) une cascade à moteur à énergie totale; (3) cogénération dans un projet de chauffage régional.

N°cat. M38-13/79-12 - 22 p

Canada \$1.75; autres pays \$2.10

022

RAPPORT DE CANMET 79-13. Taylor, G.W. "Liquid fuels from Canadian coals"

Ce rapport est une consolidation des connaissances et des opinions des chercheurs scientifiques du CANMET sur la production de carburants liquides des charbons dans le contexte canadien. Il décrit certains domaines importants de recherche et de développement notamment les techniques de base, l'approvisionnement en hydrogène, la qualité du charbon et l'impact sur le milieu. Les points importants traitant de la recherche et de la stratégie de l'installation pilote y sont décrits.

N°cat. M38-13/79-13 - 43 p

Canada \$3.10; autres pays \$3.75

023

RAPPORT DE CANMET 79-14. Faye, G.H., Bowman, W.S. et Sutarno, R. "Zinc concentrate CZN-1 - A certified reference material"

Un concentré de zinc CZN-1 de Kimberley, C.-B., a été préparé comme matériau de référence de composition. Dans un programme analytique de "libre choix", 30 laboratoires ont contribué les résultats pour un ou plusieurs des 21 éléments du CZN-1. Des valeurs recommandées ont été assignées pour: Ag, Al₂O₃, As, Cd, Cu, Fe, Hg, Mn, Pb, S, Sb et Zn. Des valeurs non-certifiées ont été déterminées pour: Au, Bi, CaO, In, MgO, Se, SiO₂ et Sn.

N°cat. M38-13/79-14 - 39 p

Canada \$2.00; autres pays \$2.40

024

RAPPORT DE CANMET 79-15. Faye, G.H., Bowman, W.S. et Sutarno, R. "Lead concentrate CPB-1 - A certified reference material"

Un concentré de plomb CPB-1 de Kimberley, C.-B. a été préparé comme matériau de référence de composition. Dans un programme analytique de "libre choix", 25 laboratoires ont contribué les

résultats pour un ou plusieurs des 21 éléments du CPB-1. Des valeurs recommandées ont été assignées pour: Ag, Al₂O₃, As, Bi, Cd, Cu, Fe, Hg, Pb, S, Sb, SiO₂ et Zn. Des valeurs non-certifiées ont été déterminées pour: Au, CaO, In, MgO, Mn, Se, Sn et Te.

N°cat. M38-13/79-15 - 38 p
Canada \$2.00; autres pays \$2.40

025

RAPPORT DE CANMET 79-16. Faye, G.H., Bowman, W.S. et Sutarno, R. "Copper concentrate CCU-1 - A certified reference material"

Un concentré de cuivre CCU-1 de Lynn Lake (Manitoba) a été préparé comme matériau de référence de composition. Dans un programme analytique de "libre choix", 33 laboratoires ont contribué les résultats pour un ou plusieurs des 18 éléments du CCU-1. Des valeurs recommandées ont été assignées pour: Ag, Al₂O₃, Au, Cu, Ag, Pb, SiO₂ et Zn. Des valeurs non-certifiées ont aussi été déterminées pour: As, Bi, CaO, Cd, Fe, MgO, Mo, S, Se et Te.

N°cat. M38-13/79-16 - 27 p
Canada \$1.45; autres pays \$1.75

026

RAPPORT DE CANMET 79-17. George, A.E., Smiley, G.T. et Sawatzky, H. "Rapid chromatographic procedure for characterizing hydrocarbons in synthetic fuel naphtha"

Le présent rapport décrit un procédé de chromatographie rapide pour la caractérisation chimique des fractions de naphtha des carburants synthétiques. Cette méthode permet d'obtenir les renseignements complets sur la distillation, la teneur en soufre, l'analyse de la distribution type d'hydrocarbures saturés, oléfiniques et aromatiques ainsi que l'identification des hydrocarbures les plus abondants dans le naphtha.

N°cat. M38-13/79-17 - 12 p
Canada \$2.75; autres pays \$3.30

027

RAPPORT DE CANMET 79-18. Gransden, J.F. et Leeder, W.R. "Influence of flue temperature and coal preparation on coke quality in 460-mm technical-scale coke oven"

L'effet de la température du carreau, de la teneur d'eau dans le charbon et du degré de pulvérisation sur les caractéristiques de fonctionnement du four et sur la qualité du coke a été déterminé pour un mélange industriel de charbon marchand habituellement employé pour la fabrication du coke dans le haut fourneau. Le programme d'essai a été effectué dans un four à coke d'envergure technique de 460 mm. On a choisi les conditions normalisées de fonctionnement du fourneau à partir des résultats: température du carreau, 1125°C; teneur d'humidité du charbon, 6%; granulométrie du charbon 80% à moins 3,25 mm.

N°cat. M38-13/79-18 - 11 p
Canada \$1.50; autres pays \$1.80

028

RAPPORT DE CANMET 79-19. Hoey, G.R., Dingley, W. et Wiles, C.T. "Test installation for studying erosion-corrosion of metals for coal washing plants"

Des essais ont été effectués sur des

panneaux d'acier doux avec des suspensions d'alundon, de quartz, de charbon lavé et de rebut de charbon. Cette étude a démontré que l'application menée à bonne fin des techniques de prévention de la corrosion réduirait le gaspillage de métal dans les usines de lavage du charbon.

N°cat. M38-13/79-19 - 9 p
Canada \$1.10; autres pays \$1.35

029

RAPPORT DE CANMET 79-20. Sawatzky, H., Beshai, J.E., Smiley, G.T. et George, A.E. "Effect of hydrocracking on the distribution of nitrogenous components in Athabasca bitumen"

On a examiné les diverses fractions de composés azotés et autres composés polaires apparentés à l'aide de la spectrométrie infra-rouge et le titrage des éléments basiques. Les données de l'infra-rouge ont démontré que les carbazols, les indoles et autres composés apparentés, particulièrement s'il se trouvent dans les asphaltènes, augmentent considérablement avec la sévérité de l'hydrocracquage. On discute aussi de la basicité des produits d'hydrocracquage qui elle aussi augmente la sévérité.

N°cat. M38-13/79-20 - 10 p
Canada \$1.25; autres pays \$1.50

030

RAPPORT DE CANMET 79-21. Itzkovitch, I.J. et Ritcey, G.M. "Removal of radionuclides from process streams - A review"

Le présent rapport décrit l'origine et la maîtrise d'une contamination par le radium 226, le thorium 230 et le plomb 210 des effluents d'usine provenant de la trituration classique ou non des minerais d'uranium, passe en revue la chimie fondamentale des radionucléides ayant trait aux alternatives possibles de maîtrise et présente ces alternatives accompagnées d'un sommaire de données de coûts publiées.

N°cat. M38-13/79-21 - 171 p
Canada \$8.00; autres pays \$9.60

031

RAPPORT DE CANMET 79-22. Collings, R.K. "Mineral waste resources of Canada report No. 3 - Mining wastes in British Columbia"

Ce rapport fournit des données de base sur les roches résiduelles et les résidus d'établissement de broyage de la Colombie-Britannique dont la production annuelle s'élève à environ 300 millions de tonnes. Les données concernant l'abondance, la minéralogie et les propriétés physiques et chimiques des déchets des vingt-sept mines en exploitation sont disposés en tableaux pour les trois principaux types de mine: métaux, minéraux non-métalliques ou industriels et charbon. Les usages possibles de certains déchets et la recherche pertinente sont mentionnés.

N°cat. M38-13/79-22 - 36 p
Canada \$2.00; autres pays \$2.40

032

RAPPORT DE CANMET 79-24. Shnay, R.C. (réd. R.K. Buhr) "Assessment of the technological capabilities of the Canadian foundry industry"

Une étude détaillée a été effectuée de l'industrie canadienne de la fonderie pour pré-

lever les renseignements détaillés de ses ressources technologiques. Les résultats ont été résumés et sont présentés au profit de l'industrie et du public en général.

N°cat. M38-13/79-24 - 21 p
Canada \$3.25; autres pays \$3.90

033

RAPPORT DE CANMET 79-24F. Shnay, R.C. (réd. R.K. Buhr) "Evaluation des ressources technologiques de l'industrie canadienne de la fonderie"

Version française du rapport précédent 79-24.

N°cat. M38-13/79-24F - 25 p
Canada \$3.25; autres \$3.90

034

RAPPORT DE CANMET 79-25. "CANMET REVIEW 1978-79"

Faire en sorte que les substances minérales et l'énergie soient utilisées avec le meilleur rendement possible, mettre au point de nouvelles techniques à cet effet, et faire en sorte que le Canada dispose des ressources énergétiques, traditionnelles ou nouvelles dont il a besoin, telles sont les fonctions primordiales du Centre canadien de la technologie des minéraux et de l'énergie. La revue que nous présentons ici montre les aspects principaux des diverses opérations et activités que le CANMET a menées à bien dans le cadre de ses deux programmes au cours de l'exercice 1978-79.

N°cat. M38-13/79-25 - 56 p
Canada \$4.25; autres pays \$5.10

035

RAPPORT DE CANMET 79-27. Cabri, L.J. et Laflamme, J.H.G. "Mineralogy of samples from the Lac des Iles area, Ontario"

Les échantillons du Lac des Iles (Ontario) ont été analysés pour déterminer la minéralogie et la distribution des éléments du groupe platine provenant de différents endroits et de types de roche. Les déterminations minéralogiques sont présentées avec les données sur les associations minéralogiques et les variations granulométriques.

N°cat. M38-13/79-27 - 20 p
Canada \$1.00; autres pays \$1.20

036

RAPPORT DE CANMET 79-28. Malhotra, V.M. "Sulphur concrete and sulphur infiltrated concrete: Properties, applications and limitations"

Ce rapport est divisé en deux parties. La première partie concerne le développement du béton de soufre, en donne les propriétés mécaniques, les avantages et les limites; la seconde partie décrit le béton imprégné de soufre et discute les propriétés mécaniques, la durabilité, les applications et les limites.

N°cat. M38-13/79-28 - 26 p
Canada \$2.25; autres pays \$2.70

037

RAPPORT DE CANMET 79-29. Coates, D.F., Larocque, G. et Gilles, L. "Geological disposal of high-level radioactive wastes"

Les déchets provenant des centrales à énergie nucléaire sont très radioactifs et peu-

vent être la cause de sérieux problèmes humains et environnementaux qui doivent être résolus. Les problèmes d'élimination sont décrits et des suggestions sont apportées pour l'enfouissement souterrain de ces déchets dans des endroits exploités à cette fin parmi les roches pyrogènes.

N°cat. M38-13/79-29 - 21 p
Canada \$1.50; autres pays \$1.80

038

RAPPORT DE CANMET 79-30. Malhotra, V.M. et Carette, G.G. "In situ testing for concrete strength"

Ce rapport décrit certaines méthodes d'essai pour estimer la résistance du béton in situ: essais de dureté de surface, les techniques de pénétration et de rebondissement, les méthodes d'extraction et de fracture en flexion, les techniques de vitesse d'impulsion, les méthodes combinées et les méthodes relevant du concept de maturité.

N°cat. M38-13/79-30E - 20 p
Canada \$1.75; autres pays \$2.10

039

RAPPORT DE CANMET 79-31. Malhotra, V.M. "Superplasticizers: Their effect on fresh and hardened concrete"

Ce rapport décrit brièvement les principaux types de superplastifiants disponibles en Amérique du Nord, discute leur mode d'action et décrit leur effet sur les propriétés du béton frais et durci. Quoique ce béton puisse satisfaire pour les pièces de ciment pré-fabriquées, il existe encore certains problèmes à surmonter concernant la perte d'affaissement avant que l'usage soit répandu.

N°cat. M38-13/79-31 - 23 p
Canada \$2.00; autres pays \$2.40

040

RAPPORT DE CANMET 79-32. Berry, E.E. "Concrete made with supplementary cementing materials"

Des matériaux cimentaires suppléants tels que les laitiers granulés provenant des hauts-fourneaux, les cendres volantes et les pouzzolanes naturelles peuvent remplacer une partie du ciment portland employé dans le béton. Comme la production de ces matériaux requiert moins d'énergie que celle du ciment portland qu'ils remplacent, leur emploi peut réduire la consommation d'énergie nécessaire à la fabrication du béton et peut donc contribuer à réduire les coûts de construction. Ce rapport donne un aperçu des matériaux cimentaires suppléants et encourage la recherche future pour améliorer le contrôle de la qualité, mettre au point des essais de normalisation et évaluer le rendement à long terme.

N°cat. M38-13/79-32 - 17 p
Canada \$2.25; autres pays \$2.70

041

RAPPORT DE CANMET 79-33. Wilson, H.S. "Light-weight aggregates: Properties, applications and outlook"

Ce rapport décrit les diverses propriétés et applications des agrégats légers produits à partir d'argile, de schiste argileux, d'ardoise, de cendre volante et de laitier de haut fourneau et donne une discussion de leurs méthodes de pro-

duction. Un des principaux avantages pour la fabrication de pièces de maçonnerie de béton sont la réduction du poids des immeubles de 20 à 30% et la résistance thermique est doublée. A cause de l'augmentation des coûts du carburant pour produire de tels agrégats il faudra en améliorer les procédés de production si l'on veut qu'ils demeurent compétitifs.

N°cat. M38-13/79-33 - 23 p
Canada \$2.25; autres pays \$2.70

042

RAPPORT DE CANMET 79-34. Adams, C.J. "Recycling of steel plant waste oxides - A review"

De grandes quantités de rebuts ferrugineux sont produits dans les aciéries comme sous-produits de production d'acier. Ce rapport résume les sources et les types de rebuts produits et décrit les procédés qui ont été mis au point pour les recycler.

N°cat. M38-13/79-34 - 13 p
Canada \$1.50; autres pays \$1.80

043

RAPPORT DE CANMET 79-38. Malhotra, V.M. "Strength and freeze-thaw characteristics of concrete incorporating granulated blast furnace slag"

La fabrication du ciment portland entraîne une grande consommation d'énergie. Les chercheurs essaient donc de trouver des matériaux plus économiques susceptibles de remplacer en partie le ciment dans le béton. Le présent rap-

port présente les résultats des études effectuées en laboratoire afin de déterminer les caractéristiques de résistance et de durabilité suite au gel-dégel du béton auquel on a ajouté des scories granuleuses de haut-fourneau. Quoique les scories aient un bon potentiel comme remplacement partiel pour le ciment portland, elles tendent à réduire la résistance à la compression; on recommande donc une recherche plus poussée sur ce point.

N°cat. M38-13/79-38 - 26 p
Canada \$2.25; autres pays \$2.70

044

RAPPORT DE CANMET 80-4E. Gransden, J.F., Price J.T. et Leeder, W.R. "Cokemaking with Canadian medium and high-volatile commercial coking coals"

Les questions soulevées sur la disponibilité future des charbons cokéfiants importés à haute teneur employés dans les usines sidérurgiques canadiennes ont entraîné l'étude des charbons domestiques. Le mélange des charbons de l'est à basse teneur de cendres et haute teneur de soufre avec des charbons de l'ouest à haute teneur de cendres et à basse teneur de soufre donne des cokes ayant des propriétés chimiques et physiques qui conviennent au haut-fourneau. Tous les mélanges ayant été carbonisés ayant des basses pressions de cokéfaction et donc pouvaient être cokéfiés dans les fours industriels. Les essais divers sont décrits.

N°cat. M38-13/80-4E - 29 p
Canada \$2.25; autres pays \$2.70

SECTION 2

PUBLICATIONS

Ces communications sont disponibles dans les revues scientifiques ou les procès-verbaux mentionnés ou en s'adressant directement à l'auteur.

LABORATOIRES DES SCIENCES MINÉRALES

045

Barkley, D.J. "The monaqueous potentiometric determination of commercial benzophenone oxime (LIX) extractants"; Anal Chim Acta 105:83-89; 1979.

Dans ce rapport on décrit une méthode potentiométrique non-aqueuse pour déterminer les réactifs d'oxime benzophénone (LIX) substitués employés comme extracteurs dans les procédés d'extraction du cuivre.

046

Bowman, W.S., Faye, G.H., Sutarno, R., McKeague, J.A. et Kodama, H. "New CCRMP reference soils SO-1 to SO-4"; Int Geostandards Newsletter 3:2:109-113; 1979.

On y retrouve des renseignements sur la préparation, la caractérisation et l'homologation des échantillons de sol SO-1 à SO-4 pour leur emploi comme matériaux de référence certifiés.

047

Cabri, L.J., Rowland, J.F., Gilles, J.H.G. et Stewart, J.M. "Keithconnite, telluropalladinite and other Pd-Pt tellurides from the Stillwater complex, Montana"; Can Mineral 17:589-594; 1979.

Les études minéralogiques des échantillons de roc et des concentrés de minéraux lourds provenant du complexe de Stillwater (Montana), ont mis à jour des assemblages divers et à haute teneur de minéraux du groupe platine. Ce rapport décrit les nouveaux minéraux keithconnite et telluropalladinite ainsi que trois autres tellurures du groupe platine.

048

Donaldson, Elsie M. "Determination of antimony in concentrates, ores and non-ferrous materials by atomic-absorption spectrophotometry after iron-lanthanum collection, or by the iodide method after further xanthate extraction"; Talanta 26:999-1010; 1979.

On décrit les méthodes pour déterminer des teneurs infimes ou moyennes d'antimoine dans les concentrés de cuivre, de nickel, de molybdène, de plomb et de zinc et dans les minerais.

049

Donaldson, Elsie M. "Determination of bismuth in ores, concentrates and non-ferrous alloys by atomic-absorption spectrophotometry after separation

by diethyldithiocarbamate extraction or iron collection"; Talanta 26:1119-1123; 1979.

On décrit deux méthodes simples, fiables et moyennement rapide d'absorption atomique pour déterminer les teneurs infimes et mineures de bismuth dans les concentrés et les minerais de cuivre, de nickel, de molybdène, de plomb et de zinc et dans les alliages non-ferreux. Les résultats obtenus par les deux méthodes ont été comparés avec ceux que l'on obtient par spectro-photométrie selon la méthode iodure après la séparation du bismuth par extractions DDTc et xanthate.

050

Hitchen, A. "The differential pulse polarographic determination of trace amounts of tin and its application to zinc-aluminum alloys"; Talanta 26:369-372; 1979.

Une méthode polarographique d'impulsions différentielles est décrite pour déterminer des teneurs de 0,001-0,02% Sn dans les alliages de zinc-aluminium.

051

Jambor, J.L. "Mineralogical evaluation of proximal-distal features in New Brunswick massive-sulfide deposits"; Can Mineral 17:649-664; 1979.

On effectue une classification expérimentale de la plupart des gisements dans la région de Bathurst au Nouveau-Brunswick en fonction de leur déplacement établi ou hypothétique dans les canalisations d'alimentation (proximal ou distal) et l'emplacement de la cristallisation du sulfure (autochtone ou allochtone).

052

Joe, E.G. "Capital and operating costs for uranium milling in Canada"; ERP/MSL 78-203 (OP); présenté Ann Gen Meet CIM; Montréal; 24 avril 1979.

Les méthodes pour déterminer les coûts de premier établissement et de fonctionnement d'une usine de lixiviation à l'acide d'une capacité de 3000 t/jour sont présentées. On décrit aussi les systèmes basés sur les coûts de premier établissement des principales pièces d'équipement en employant les facteurs de Lang et de Chilton.

053

Kodama, H. et Dean, R.S. "Illite from Eldorado,

Saskatchewan"; Can Mineral 18:109-118; 1980.

La composition chimique, la diffraction des rayons-X et la microscopie électronique ont révélé que la fraction 0,07 à 2 µm d'un échantillon de schiste argileux de Eldorado est composée d'un illite exceptionnellement pur. Celle-ci a été caractérisée et ses détails minéralogiques sont présentés.

054

Leclerc, A. et Townsend, M.G. "Quadrupole splitting and ground state in FeS and NiS(57Fe)"; J Phys Chem Solids 40:1069-1072; 1979.

D'après une étude Mossbauer effectuée sur un monocristal de Ni_{0,996}S(2% Fe⁵⁷) à 298K (au-dessus de la transition métal-isolateur à (~230K), on a déterminé que le signe de la fission quadrupole en Fe⁵⁷ est positif; ceci contraste avec le signe négatif que l'on retrouve avec le feS et Fe_{0,93}S. Un modèle d'essai est présenté qui correspond à ces résultats et avec les données d'anisotropie magnétique.

055

MacKinnon, D.J., Brannen, J.M. et Kerby, R.C. "The effect of cadmium on zinc deposit structures obtained from high purity industrial acid sulphate electrolyte"; J App Electrochem 9:603-613; 1979.

L'effet du cadmium sur la croissance du cristal de zinc cathodique a été étudié dans un électrolyte industriel de haute pureté avec ou sans additif afin d'établir un rapport entre la morphologie, la polarisation et l'importance de la contamination au cadmium. Les résultats sont inscrits.

056

MacKinnon, D.J., Brannen, J.M. et Kerby, R.C. "The effect of lead on zinc deposit structures obtained from high purity synthetic and industrial acid sulphate electrolytes"; J Appl Electrochem 9:55-70; 1979.

Les résultats sont décrits d'une étude de l'électrolyse du zinc entreprise afin de déterminer l'effet de la contamination au Pb sur la morphologie et l'orientation des dépôts de zinc obtenus des électrolytes de sulfate acide et de déterminer l'effet du Pb sur le comportement de polarisation et le rendement du dépôt de zinc. Ces essais ont été effectués afin de définir si on peut contrôler le procédé à l'aide de techniques de polarisation.

057

Makhija, R. et Hitchen, A. "The titrimetric determination of sulphate, thiosulphate and polythionates in mining effluents"; Anal Chim Acta 105:375-382; 1979.

Un procédé trithiométrique y est proposé pour déterminer diverses formes de soufre dans les effluents des mines. Les résultats obtenus correspondent très bien avec ceux que l'on obtient par des méthodes gravimétriques beaucoup plus longues.

058

Petruk, W. "Correlation between grain sizes in a polished section with sieving data and an investigation of mineral liberation measurements from

polished sections"; Inst Min Metall Sect C 87:C271-277; 1978.

Des échantillons de matériaux connus ont été analysés à l'aide d'un analyseur d'images Quantimet 720 afin de (1) comparer les distributions granulométriques obtenues à la suite d'un criblage avec les distributions granulométriques des grains telles qu'observées dans les sections polies et (2) pour analyser la libération minérale des sections polies.

059

Ritcey, G.M. "Crud in solvent extraction processing - A review of causes and treatment"; Hydrometallurgy 5:97-107; 1980.

Une vue d'ensemble est présentée sur les divers aspects qui influencent la perte de solvant par la formation de boue rencontrée dans plusieurs usines hydrométallurgiques qui utilisent le procédé d'extraction par le solvant.

060

Smith, C.W. et Dalton, J.L. "Application of EDXRF analysis to the determination of metallic elements in airborne mineralogical dusts"; Can J Spectro 24:6:163-171; nov-déc 1979.

Le but de cette étude était d'examiner le potentiel du EDXRF (fluorescence à rayons X avec dispersion de l'énergie) pour mesurer les éléments autres que le silice dans les particules prélevés du système CAMPED. L'équipement donne une bonne sensibilité et effectue les analyses en peu de temps. Les techniques de calibration sont décrites et l'on suggère certaines modifications pour améliorer la sensibilité à certains éléments en particulier et pour l'appliquer aux autres éléments.

061

Steger, H.F., Faye, G.H., Bowman, W.S. et Sutarno, R. "New CCRMP reference uranium ore BL-5 and sulphide concentrates CCU-1, CPB-1 and CZN-1"; Geostandards Newsletter 3:2:173-175; 1979.

Ce rapport présente les renseignements sur la préparation, la caractérisation et l'homologation du minerai d'uranium BL-5 et une suite de concentrés de chalcopyrite, de galène et de sphalérite, CCU-1, CPB-1 et CZN-1 respectivement.

062

Stewart, J.M. et Szymanski, J.T. "A redetermination of the crystal structure of potassium tri-thionate, K₂S₃O₆"; Acta Crystallogr B35:1967-1970; 1979.

L'ion trithionate est l'un des composants des surplus de thiosel du procédé de flottation. Le présent rapport donne un compte rendu de l'examen de la structure cristalline du trithionate de potassium dans le cadre d'un programme pour réduire la pollution industrielle.

063

Stewart, J.M. et Szymanski, J.T. "The crystal structure of potassium tetrathionate, K₂S₄O₆"; Acta Crystallogr 1335:1971-1973; 1979.

La structure cristalline du tétrathionate de potassium a été déterminée par une étude des effluents de débris des installations d'exploitation minière de sulfure.

064

Szymanski, J.T. "The crystal structure of platarsite, $\text{Pt}(\text{As},\text{S})_2$ and a comparison with sperrylite, PtAs_2 "; Can Mineral 17:117-123; 1979.

Les structures du platarsite et du sperrylite ont été examinées pour déterminer précisément le rapport entre le platarsite et le sperrylite.

065

Szymanski, J.T. "The crystal structure of tetra-aqua-cis-dichloroiron (III) tetrachloroferrate (III) monohydrate (ferric chloride 2 1/2-hydrate)"; Acta Crystallogr B35:1958-1963; 1979.

Ce rapport présente les résultats de la première des trois structures cristallines pour les trois hydrates inférieurs de chlorure fer-

rique. Ces travaux sont la première étape d'une étude des mécanismes de réaction de lixiviation au sulfure.

066

Townsend, M.G., Webster, A.H. et Horwood, J.L. "Ferrimagnetic transition in $\text{Fe}_{0.9}\text{S}$: magnetic, thermodynamic and kinetic aspects"; J Phys Chem Solids 40:183-189; 1979.

Ce rapport donne les résultats d'une étude effectuée sur les monocristaux par les méthodes de chaleur spécifique; la spectroscopie Mossbauer et la susceptibilité magnétique de la structure magnétique et la cinétique et la thermodynamique de formation des composants ferrimagnétiques du $\text{Fe}_{0.9}\text{S}$ antiferromagnétique.

LABORATOIRES DE RECHERCHE ÉNERGÉTIQUE

067

Bancroft, G.H., Gupta, R.P., Hardin, A.H. et Ternan, M. "Quantitative electron spectroscopy for chemical analyses of bitumen processing catalysts"; Anal Chem 51:2102; 1979.

L'étude est décrite et les résultats sont donnés de la spectroscopie photoélectronique à rayons X effectuée pour analyser un grand nombre de catalyseurs $\text{Mo}/\text{Al}_2\text{O}_3$ d'hydrodésulfuration contenant du nickel et du cobalt comme promoteurs.

068

Hayden, A.C.S. "How does ambient temperature affect economy and emissions?"; J Soc Auto Eng 87:1; 1979.

Les résultats sont présentés d'une étude récente effectuée au Laboratoire canadien de recherche sur la combustion du CANMET sur les effets de la température ambiante sur l'économie et les émissions de l'essence diesel des moteurs à charge stratifiée, basse combustion et à suralimentation par turbine. On compare ces résultats avec les automobiles à carburant conventionnel équipés d'un catalyseur.

069

Hayden, A.C.S. et Braaten, R.W. "Efficient residential oil-heating systems - A manual for service, designers and builders"; Rapport ERL 79-8 (On peut obtenir ce rapport en s'adressant à la Direction de la conservation et de l'énergie renouvelable, 580, rue Booth, Ottawa (Ontario) K1A 0E4).

Ce manuel est destiné à améliorer le rendement des systèmes de chauffage à l'huile résidentiel en mettant l'emphase sur l'entretien périodique et en effectuant certaines modifications au système lui-même.

070

Kelly, J.F. et Ternan, M. "Hydrocracking Athabasca bitumen with alkali metal promoted $\text{CoO}-\text{MoO}_3-\text{Al}_2\text{O}_3$ catalysts"; Can J Chem Eng 57:726-733.

Les promoteurs de métal alcalin (lithium,

sodium et potassium) ont été ajoutés aux catalyseurs employés pour l'hydrocraquage du bitume d'Athabasca pour réduire les dépôts de coke qui occasionnent une désactivation du catalyseur. Les résultats sont expliqués en fonction des changements dans les propriétés électroniques du catalyseur survenus à l'addition des promoteurs.

071

Ranganathan, R., Pruden, B.B., Ternan, M. et Denis, J.M. "Evaluation of a two-stage thermal and catalytic hydrocracking process for Athabasca bitumen"; Am Chem Soc; Advances in Chem, No. 179:54-66.

On décrit un procédé d'hydrocraquage thermique et catalytique en deux étapes pour l'enrichissement du bitume d'Athabasca. Trois catalyseurs - cobalt-molybdène sur alumine, nickel-molybdène sur alumine et nickel-tungstène sur alumine - ont été évalués à l'étape d'hydrocraquage catalytique et l'on compare leurs sélectivités.

072

Sekhar, H.V.C. et Ternan, M. "Thermogravimetric studies on catalytic and noncatalytic pyrolysis of pitch derived from hydrocracked Athabasca bitumen"; Am Chem Soc 15:183-259.

Les résultats sont donnés d'une étude effectuée afin de déterminer le comportement pyrolytique d'un résidu d'hydrocraque sous vide en atmosphère inerte en présence et en l'absence d'un catalyseur alumine employant les techniques thermogravimétriques.

073

Ternan, M. et Fuller, O.H. "A comparison of methods used to measure pore size in solids"; Can J Chem Eng 57:750-757; 1979.

Une comparaison est présentée des diverses techniques de mesure de la dimension des pores dans plusieurs échantillons solides notamment: adsorption de l'azote, adsorption de l'oxygène, porosimétrie du mercure, microscopie électronique de balayage et microscopie optique.

LABORATOIRES DE MÉTALLURGIE PHYSIQUE

074

Couture, A. "Effect of iron, antimony, aluminum and silicon contamination on the mechanical properties of four tin bronzes"; Am Fdy Soc Trans 79:50:439-451; 1979.

L'effet sur les alliages de cuivre de l'antimoine (Sb) et du fer (Fe) ajouté seuls et ensuite combinés a été déterminé. On a aussi déterminé l'influence de l'aluminium (Al) et du silicium (Si) ajoutés seuls. Les résultats des essais de variation de la concentration de ces quatre éléments ont été évalués en fonction de leur effet sur les propriétés mécaniques et autres.

075

Lagowski, B. "Reacted sand inclusions and their effect on the tensile properties of magnesium alloys"; Am Fdy Soc Trans 87:387-390; 1979.

Ce rapport décrit une étude entreprise pour déterminer les effets des inclusions de sable qui ont réagi sur les propriétés de traction des alliages de magnésium.

076

McDonald, R.D. "Automotive under-body corrosion testing"; Proc Nat Assoc Corr Eng Ann Meet; Chicago; 3-7 mars 1980.

Les caractéristiques de corrosion des matériaux envisagés pour la construction des véhicules ont été évaluées et comparées avec les aciers actuels d'usage commun. Le premier d'une série d'essais de corrosion effectués sur ces matériaux est décrit dans ce rapport.

077

Milliken, K.S. et Mitchell, C.M. "Comparison of strain gauge and X-ray diffraction measurements of residual stresses in a weldment of HY130 steel"; Proc 5th Bolton Landing Conf Weldments: Physical Metallurgy and Failure Phenomena, General Electric co. Technology and Marketing Operation; Schenectady, New York; 1979.

La distribution des contraintes résiduelles sur la zone affectée thermiquement et la soudure sur une plaque d'essai circulaire en acier HY130 a été déterminée par la méthode de la jauge d'allongement en employant une jauge d'allongement placée sur une jante et par la trépanation du centre de la plaque. Dans ce rapport on démontre la relation qu'il y a entre les contraintes résiduelles et la fissuration par corrosion sous tension.

078

Packwood, R.H., Kriz, J. et Patmore, D.J.F. "EPMA-SEM as tools in the investigation of hydro-cracking processes"; Proc 14th Am Conf Microbeam Anal Soc; San Antonio, Texas; 12-17 août 1979.

Deux études sont décrites qui visent des problèmes sur l'hydrocraquage catalytique et thermique. A cette fin, on emploie les techniques de la microsonde et de la microscopie électronique de balayage avec la spectroscopie à rayons X avec

dispersion d'énergie.

079

Sahoo, M., Edwards, J.O. et Thomson, R. "Influence of corrosion-inhibiting heat treatment on the microstructure and mechanical properties of nickel-aluminum bronze alloy C95800"; Am Fdy Soc Trans 87:495-502; 1979.

Les différences dans la microstructure et les propriétés d'un alliage de bronze nickel-aluminium après le traitement thermique inhibiteur de la corrosion sont interprétées en fonction de leur composition et la vitesse de refroidissement avant le traitement.

080

Sahoo, M., Wang, K.C. et Edwards, J.O. "Foundry characteristics of both Nb-modified and Cr-modified high strength 70/30 Cu-Ni alloys"; Am Fdy Soc Trans 53:529-536; 1979.

Un sommaire est donné des études entreprises sur les caractéristiques de fonderie et de soudage des alliages cupro-nickel 70/30 compte tenu de la demande future prévue pour de tels matériaux pour les systèmes de canalisation à bord de navires.

081

Sahoo, M. et Edwards, J.O. "Gating and risering of medium-size commercial casting of high-strength cupro-nickel (IN 768)"; Am Fdy Soc Trans 87:519; 1979.

Les résultats sont donnés d'une étude effectuée sur les caractéristiques de fonderie, les propriétés mécaniques et la soudabilité d'un alliage de cupro-nickel 70/30 (IN 768) modifié par le chrome.

082

Shnay, R.C. et Buhr, R.K. "Assessment of the technological capabilities of the Canadian foundry industry"; Modern Castings; mars 1980.

Le résumé est donné dans la Section 1, entrée N° 033, Rapport de CANMET 79-24F.

083

Skelly, H.M. "Some mechanical properties of powder-forged iron/alloy mixtures"; Powder Metall 22:2:41-44; 1979.

Le présent rapport décrit une étude entreprise afin de déterminer la possibilité de produire des pièces forgées alliées à partir d'une poudre préparée en mélangeant les additions alliées avec de la poudre de fer. Les résultats démontrent que des propriétés de traction utiles peuvent être obtenues des pièces forgées produites à partir d'un mélange de poudre de composition nominale: 0,5% C - 0,6% Mn - reste fer.

084

Thomson, R. et Sahoo, M. "The structure and mechanical properties of continuously cast Ni-Al bronze bar stock"; Am Fdy Soc Trans 87:485-490; 1979.

Les propriétés de l'alliage de bronze nickel-aluminium de coulée continue sont étudiées et les données sont fournies des accroissements de la résistance obtenues à la suite du traitement thermique.

085

Tyson, W.R. "Hydrogen in metals"; Can Metall Q 18:1-11; 1979.

On présente un sommaire des effets connus de l'hydrogène sur les métaux, particulièrement la dégradation et la fragilisation. Des problèmes pratiques concernant l'hydrogène sont envisagés.

DIVISION DE L'INFORMATION TECHNOLOGIQUE

086

Sutterlin, P.G. "Review of 'Geomathematics': Past, present and prospects"; Int Union Geol Sci; Episodes 1979:2.

On y présente un bref résumé des rapports publiés dans "Geomathematics: past, present and prospects" de l'International Association for Mathematical Geology. Les auteurs mentionnés sont: J.C. Griffiths, W. Schwarzacher, F.P.

Agterberg, R.A. Rayment, W.C. Krumbein et F. Chayes.

087

Weidmark, P.E. "Fifteenth supplement to bibliography of Canadian contributions in the field of rock mechanics" CIM Bull 72:807:145-147; juil. 1979.

Préparé à l'intention du Comité national canadien sur la mécanique des roches.



SECTION 3

COMMUNICATIONS ORALES

Les rapports suivants ont été présentés à diverses assemblées et conférences. Tel qu'indiqué, certaines de ces communications ont été publiées dans le Procès verbal de la conférence en question ou ont été soumis à des journaux. On peut se les procurer en s'adressant au journal ou au procès verbal mentionné ou en écrivant directement à l'auteur.

LABORATOIRES DES SCIENCES MINÉRALES

088

Ahmed, S.M. "Redox reactions and photoelectrochemical studies on the 11-C surfaces of MoS₂"; ERP/MSL 79-57 (OP); présenté à 156th Meet Electrochem Soc, Los Angeles; 14-19 oct. 1979.

Résumé seulement.

089

Ahmed, S.M. "Surface chemistry of asbestos fibre"; MRP/MSL 79-132 (OP); présenté Ann Chem Soc Meet; 24-28 mars 1980; Houston, Texas.

Le traitement par voie humide, méthode alternative au traitement à sec, a été étudié en mesurant la mobilité électrophorétique et le point de charge nulle des échantillons de chrysotile. On a aussi examiné l'effet des différents réactifs sur le dépôt des fibres de chrysotile. La chimie superficielle de l'amiante est décrite brièvement.

090

Ahmed, S.M. "Use of semiconductor oxides in photoelectrochemical cells for solar energy conversion: Principles and problems"; ERP/MSL 79-166 (OP); présenté Can Ceram Soc Meet; 27-29 fév. 1980.

On y présente brièvement les essais effectués afin de surmonter les problèmes rencontrés lors de l'utilisation de TiO₂ et certains titanates pour la conversion de l'énergie solaire.

091

Personnel du CANMET "Submission to Province of British Columbia Royal Commission of Enquiry - Health and Environmental Protection - Uranium Mining"; ERP/MSL 79-136 (OP); oct. 1979.

On décrit la technologie sur le traitement économique des minerais d'uranium et sur certains aspects particuliers qui ont un effet sur l'environnement et la santé publique: production et contrôle de la poussière dans les opérations de broyage; séchage et empaquetage du produit; contrôle des niveaux de radioactivité dans l'usine; et l'emmagasinage des radio-nucléides, des métaux lourds et des produits chimiques.

092

Carson, D.W. "CANALPH-3, a portable alpha spectrometer for radiation dosimetry in mines and

homes"; MRP/MSL 80-38 (OP); présenté à un atelier sur le radon et les descendants du radon dans les centres urbains où l'on effectue l'exploitation et le traitement de l'uranium; Port Hope (Ont.); 12-14 mars 1980.

Le CANALPH-3 est un spectromètre alpha portatif utilisé pour mesurer les descendants radioactifs du radon et du thoron dans le but de déterminer les dangers à la santé du personnel dans les mines et au foyer. Cet instrument est décrit et on discute aussi des procédés de comptage effectués pour déterminer les niveaux acceptables de radon et de thoron.

093

Green, D.J. "Solution spray-dried and freeze-dried sodium beta-alumina powders: Preparation and hot pressing"; ERP/MSL 79-42 (OP); présenté 4th Int Conf Mod Ceram Tech, St. Vincent, Italie; 30 mai 1979. (Sera publié dans le Procès verbal de cette conf.).

Les résultats sont présentés sur les poudres produites à partir de solution par des techniques de pulvérisation gel-gel séchage et de pulvérisation séchage. Les deux types de poudre sont comparés en fonction de leur comportement durant la calcination et de leur facilité de fabrication. Les deux techniques ont connu du succès pour la production de poudre céramique de haute qualité.

094

Green, D.J. "Hot pressing of sodium beta alumina"; ERP/MSL 79-151 (OP); présenté Ann Con Can Ceram Soc; Montréal (P.Q.); 25-27 fév. 1979.

Les poudres de sodium bêta-alumine ont été préparées par la pulvérisation-séchage et le gel-séchage de solutions. Après la caractérisation des poudres séchées et leurs produits de calcination, les poudres calcinées ont été pressées à chaud sous forme de disques de céramique compacts. On a ensuite comparé les taux de densification relative pour les deux types de poudres. Les disques ont été caractérisés par des analyses microstructurales et des phases.

095

Haque, K.E. "Hydrochloric acid leaching of an Elliot Lake uranium ore"; ERP/MSL 79-59 (OP);

présenté 18th Ann Conf Metall; Sudbury; 19-23 août 1979.

Des études en laboratoire effectuées sur la lixiviation par l'acide chlorhydrique et additionnée de chlore d'un minerai d'uranium typique provenant d'Elliot Lake sont décrites. Les résultats démontrent qu'indépendamment de la température et du temps de rétention les lixiviations additionnées de chlore préféraient l'extraction de l'uranium et du thorium et les extractions maximum, U = 98% et Th = 92%, sont survenues à 75°C avec un temps de rétention de six heures.

096

Laguitton, D. et Wilson, J.M.D. "Matbal II - A fortran program for balancing mineral processing circuits"; MRP/MSL 79-109 (OPJ); présenté 18th Ann Conf Metall, Sudbury; 19-23 août 1979. (Sera publié dans procès verbal de la conf.)

Un nouveau programme FORTRAN a été mis au point qui permettra d'étudier à fond et de façon routinière les conditions d'écoulement à l'état stable dans les réseaux de traitement des minéraux. Ce programme se nomme MATBAL II. Le présent rapport décrit la méthode et donne les détails du calcul de l'erreur. Un exemple, tiré des données déjà publiées, est employé pour démontrer l'application du programme.

097

Laguitton, D., Pilgrim, R., Hodouin, D. et Everell, M.D. "Computer simulators, building blocks for the mineral processor"; MRP/MSL 80-6 (OPJ); présenté Can Min Proc Ann Meet, Ottawa; jan. 1980. (Sera publié dans Procès verbal)

Il s'agit ici de l'étude d'un cas où l'on a appliqué le modelage et la simulation par ordinateur pour améliorer le broyage dans un concentrateur.

098

MacKinnon, D.J. et Brannen, J.M. "Zinc electro-winning from chloride electrolyte"; MRP/MSL 79-83 (OP); présenté 109th AIME Ann Meet, Las Vegas, Nevada; 24-28 fév. 1980.

Un procédé d'extraction par voie électrolytique est décrit selon lequel le zinc métallique compact est extrait directement d'un électrolyte de chlorure de zinc aqueux purifié contenant 15 g/L Zn, 0,12 M HCl et 15 mg/L de chlorure de tétrabutylammonium comme agent adoucisseur.

099

Mathieu, G.I. "Desulphurization and de-ashing of an Eastern coal by high-gradient magnetic separation"; ERP/MSL 79-80 (OP); présenté à 1979 Eng Found Conf Adv Coal Cleaning, Rindge, New Hampshire, U.S.A.; 5-10 août 1979.

Des essais ont été effectués sur du charbon brut provenant de la mine Prince de Cape Breton Development Corporation en employant un procédé de séparation magnétique. L'échantillon contenait 9,26% de cendre et 2,56% de soufre pyritique dont 57,4% et 65,4% respectivement ont été prélevés par la séparation magnétique. Les essais sont décrits ainsi que les caractéristiques de l'échantillon de charbon et celles du séparateur magnétique.

100

Mikhail, S.A. "DTA investigations of the chlorination of some sulphide minerals"; MRP/MSL 79-95 (OP); présenté CIM Conf Metall; août 1979.

Le présent rapport décrit une étude effectuée sur la chloruration des minéraux de sulfure par l'analyse thermique différentielle ou DTA. Les minéraux étudiés sont: galène, sphalérite, pyrite et chalcopyrite.

101

Mirkovich, V.V. "Thermal diffusivity of Ba-mica and Ba-mica/yttria-stabilized zirconia composites"; ERP/MSL 79-145 (OPJ); présenté 16th Int Therm Conduct Conf; 7-9 nov. 1979. (Sera publié dans le procès verbal).

Un échantillon de Ba-mica solide et un composé de zirconium stabilisé au Ba-mica/yttrium ont été préparés et leurs diffusibilités thermiques ont été déterminées de 25°C à 700°C. Les mesures prises sur un composé de Ba-mica/zirconium ayant une carence en oxygène indiquent que la formation d'une lacune d'oxygène réduit de façon marquée les propriétés de transmission de la chaleur.

102

Pint, P. "Electrochemistry of molten salts"; MRP/MSL 79-163 (OP); présenté au département de chimie de l'Université Carleton, Ottawa; 30 nov. 1979.

Certaines propriétés des sels en fusion sont décrites et comparées avec les électrolytes aqueux. Les avantages des systèmes de sel fondu pour l'électro-rafinage et l'extraction par voie électrolytique des métaux sont discutés et des exemples sont donnés des procédés industriels.

103

Quon, D.H.H. et Malhotra, V.M. "Effect of superplasticizers on workability, strength and degree of conversion of high-alumina cement concrete"; MRP/MSL 80-55 (OPJ); présenté Ann Meet Am Ceram Soc; 27-30 avril 1979. (Sera publié dans J Am Concr Inst)

Ce rapport donne les résultats d'une étude effectuée afin de déterminer l'effet des superplastifiants sur la malléabilité, la résistance à la compression et le degré de conversion des bétons de ciment à haute teneur d'alumine.

104

Quon, D.H.H., Wheat, T.A. et Nesbitt, W. "Synthesis, characterization and fabrication of $\text{Na}_{1+x} \text{Zr}_2 \text{Si}_x \text{P}_{3-x} \text{O}_{12}$ powders"; ERP/MSL 80-9 (OP); présenté Can Ceram Soc; 24-26 fév. 1980.

Une technique chimique par voie humide a été employée pour préparer le $\text{Na}_{1+x} \text{Zr}_2 \text{Si}_x \text{P}_{3-x} \text{O}_{12}$. Les effets des conditions de frittage et de l'atmosphère sur la densité et la formation de phase dans le système ont été examinés.

105

Steger, H.F. et Faye, G.H. "The State-of-the-Art in the analysis of reference materials of the CCRMP"; MRP/MSL 79-106 (OP); présenté Int Symp Prod and Use Ref Mater; Berlin, Allemagne de l'Ouest; 13-16 nov. 1979.

Une compilation de l'information méthodologique est présentée grâce aux données mis à

la disposition du Projet sur les matériaux de référence certifiés qui ont jusqu'à ce point effectué 90 homologations pour 27 constituants et 26 minéraux de référence, concentrés et produits métallurgiques. Cette information devrait servir de guide pour comparer la précision absolue et relative de plusieurs méthodes analytiques.

106

Stemerowicz, A.I. et Petruk, W. "Laboratory investigations and image analysis studies on samples from the base metal deposit of Brunswick Mining and Smelting Corp. Ltd."; MRP/MSL 79-2 (OPJ); présenté Can Miner Proc Meet; Ottawa; 23 jan. 1979 et dans Proc 76-97.

Les techniques de flottation sont décrites pour récupérer le zinc des stériles d'usine et pour produire à partir du minerai des concentrés en vrac ayant de très hautes récupérations du métal. Les résultats démontrent des récupérations de métaux, de sphalerite libre, de sphalerite sous forme de boue et de sphalerite non-libérée.

107

Sutarno, R. "Application of statistical methods for inventory verification"; ERP/MSL 80-28 (OP); présenté à CAC/ISO/TC 69 Meet; 18 avril 1980.

Une méthode simplifiée de calculer la grosseur de l'échantillon requis pour l'inspection de l'inventaire nucléaire est dérivée de la fonction de distribution de la fréquence hypergéométrique. Les applications de cette méthode dans les milieux nucléaires sont énumérées.

108

Wheat, T.A. "Synthesis of beta-aluminas from gibbsite"; ERP/MSL 80-27 (OP); présenté Elect Basic Sci Div, Can Ceram Soc; Ottawa; 24-26 fév. 1980.

Ce rapport décrit un procédé qui emploie l'adsorption d'une phase liquide selon laquelle le sodium bêta- et le bêta-alumine 1:6 binaire et ternaire (MgO - et Li_2O - stabilisé) peuvent être produits sous forme de réactifs.

109

Yoon, R. et Stemerowicz, A.I. "Collectorless flotation of chalcopyrite and sphalerite"; MRP/MSL 79-53 (OPJ); présenté Can Miner Proc; Ottawa; 24 jan. 1979 et dans Proc 186-204.

Dans ce rapport on décrit une étude selon laquelle on obtient la flottation de la chalcopyrite et de la sphalerite des minéraux de cuivre et de cuivre-zinc sans l'aide de collecteurs du type thiol.

LABORATOIRES DE RECHERCHE ÉNERGÉTIQUE

110

Belinko, K., Kriz, J.F. et Nandi, B.N. "Behaviour of different macerals during liquefaction of a high volatile bituminous coal with zinc and tin catalyst"; présenté à 6th Can Symp Catal; Ottawa; août 1979.

L'activité catalytique de l'étain et du zinc dans le procédé d'hydrogénolyse est comparé avec celle de d'autres composés d'étain en ce qui a trait à la conversion, à la consommation d'hydrogène et la distribution du produit.

111

Brown, T.D. "Coal gasification and liquefaction"; ERP/ERL 80-10 (OP); présenté à CIM First Tech Meet on Western Coals; Vancouver; 14-15 fév. 1980.

On y passe en revue les technologies de gazéification récentes employées dans la gazéification des charbons canadiens. On y décrit quatre procédés de liquéfaction du charbon.

112

Fung, D.P.C., Graham, R. "The role of catalysis in wood gasification"; ERP/ERL 79-36 (OP); présenté à Am Chem Soc Meet, Wash., D.C.; 10-12 sept. 1979.

On présente une étude documentaire et en laboratoire sur la gazéification de la biomasse en présence des catalyseurs de carbonate de potassium et d'oxyde de calcium. Les catalyseurs ont grandement haussé la teneur d'hydrogène du gaz et a favorisé un meilleur rendement net du gaz au dépend du produit carbonisé solide.

113

George, A.E. "Research projects of oil and gas resource and reserve assessment"; ERP/ERL 79-49 (OP); présenté à NACMMR Sub-Committee Meet for Energy Proc; sept. 1979.

Un sommaire est présenté des objectifs et récentes réalisations du groupe d'Evaluation des ressources et des réserves des Laboratoires de recherche énergétique du CANMET.

114

Hayden, A.C.S. "Efficiency of wood-fired appliances"; ERP/ERL 78-82 (TR)(OP); présenté à Can Wood Energy Institute et publié dans Manual on Installation, Operation and Maintenance of Wood-burning Appliances; 1979.

Ce rapport présente quatre techniques pour mesurer l'efficacité des poêles à bois et affirme que les poêles étanches peuvent être efficaces pour conserver l'énergie.

115

Hayden, A.C.S. "Performance of compressed wood briquettes in wood stoves"; ERP/ERL 79-16 (OP); présenté à 1979 Ann Conf of Can Wood Energy Inst and in Proc.

Ce rapport discute les résultats des essais préliminaires effectués sur le rendement d'un bois d'érable sec et de briquettes de bois pressé dans trois types de poêles à bois - deux poêles étanches et un non étanche. Les résultats on démontré que les briquettes ne devraient pas être employées dans un poêle non étanche.

116

Lee, G.K., Friedrich, F.D., Whaley, H. et Ogle, J.C. "Coal combustion activities of the Canadian Combustion Research Laboratory"; ERP/ERL 80-25 (OP); présenté à 82nd Ann Gen Meet CIM; Toronto, 20-23 avril 1980. (Sera publié dans CIM Bull.).

De brèves descriptions sont données des projets du Laboratoire canadien de recherche sur la combustion du CANMET mis à jour pour améliorer l'utilisation du charbon dans les chaudières et les fours conventionnels et l'usage des mélanges charbon-huile comme substitut au combustible dans l'équipement destiné au chauffage à l'huile et pour accélérer l'application des systèmes de combustion sur lit fluidisé pour les charbons à faible teneur.

LABORATOIRES DE RECHERCHE MINIÈRE

117

Bigu, J. "Statistical planning of radiation surveys"; MRP/MRL 79-106 (OP); présenté à UMITC, Elliot Lake (Ontario); oct. 1979.

On retrouve dans ce rapport des notions et des concepts utiles pour planifier des études de radiation. Le rapport est divisé en quatre sections: la méthodologie de la mesure de la radiation; la planification des études de radiation; les notions fondamentales de l'analyse statistique; et la planification des études de radiation.

118

Bigu, J. "Some elementary concepts of radiation health and safety in underground uranium mines"; MRP/MRL 80-9 (OP); présenté à l'atelier sur la santé et la sécurité, Sault Ste. Marie College of Applied Arts and Technology, Sault Ste. Marie (Ontario); 26-27 fév. 1980.

Ce rapport présente les principales sources de rayonnement, discute les effets biologiques du rayonnement ionisant et introduit les indices de rayonnement acceptés sur les dangers et l'exposition au rayonnement. On y passe en revue les techniques disponibles pour le contrôle et la mesure du rayonnement et certaines méthodes de protection personnelle contre le rayonnement notamment l'emploi de respirateurs, la rotation des travailleurs, la dosimétrie et la surveillance médicale.

119

Chakravorty, R.N. et Woolf, R.L. "Evaluation of systems for early detection of spontaneous combustion in coal mines"; ERP/ERL 79-9 (OP); présenté 2nd Int Mine Vent Congr; Reno (Nevada); 4-8 nov. 1979.

Ce rapport discute brièvement des méthodes mises au point et utilisées pour une détection précoce de combustion spontanée. On décrit les travaux effectués jusqu'à date au CANMET sur les systèmes de contrôle du monoxyde de carbone et de détection à l'infrarouge. Les études entreprises en chantier et en laboratoire indiquent que les deux systèmes peuvent être employés à bonne fin.

120

Chiang, C.S.W., Bannerman, W. et Fisekci, M.Y. "Strata control instrumentation at hydraulic operation mining of a thick and steep coal seam in Western Canada"; ERP/MRL 79-81 (OPJ); présenté à 3rd Can Symp Mining, Surveying and Rock Information Measurements, Laurentian Univ., Sudbury (Ontario); 10-12 oct. 1979.

Ce rapport résume les progrès d'une étude entreprise conjointement par le CANMET et Kaiser Resources Ltd. sur les instruments pour le contrôle des strates. Il traite de l'état actuel des instruments requis pour l'exploitation d'une mine hydraulique où l'on extrait une couche de charbon de 16 m d'épaisseur et à plus de 30° à Sparwood,

C.-B. Les résultats sont donnés pour une profondeur d'environ 300 m.

121

Dainty, E.D. "A review of the 'underground environment' contributions to the 1978/79 CANMET Minerals Program outputs"; MRP/MRL 79-46 (OP); présenté à Joint Panel on Occup and Envir Res for Uran Prod in Canada, Sudbury (Ontario); 5 juin 1979.

Ce rapport décrit les réalisations du personnel de CANMET en 1978/79 dans leur contribution à l'amélioration du milieu souterrain dans les mines canadiennes à part celles du charbon en ce qui regarde le réseau de ventilation; l'identification, la mesure et le contrôle des sources de poussière; la mesure et le contrôle des échappements diesel; l'identification, la mesure et le contrôle des sources de rayonnement; l'évaluation et le contrôle des vibrations par le bruit.

122

Dainty, E.D. "Progress during 1979 in the underground environment and tailings treatment aspects of the CANMET Minerals Program"; MRP/MRL 79-96 (OP); présenté à Joint Panel Occup Envir Res Uran Prod Canada; Ottawa; 5-6 déc. 1979.

De brèves descriptions sont données des travaux entrepris jusqu'au 30 novembre 1979 par les chercheurs du CANMET sur l'environnement souterrain et le traitement des stériles dans le cadre du Programme sur les minéraux pour l'année 1979.

123

Dainty, E.D., Lawson, A. et Mogan, J.P. "Impact on underground ventilation of the reduction of diesel emissions toxicity by water-in-oil fuel emulsification"; MRP/MRL 80-11 (OP); présenté à CIM Ann Gen Meet; Toronto; 20-24 avril 1980.

La réduction de la toxicité des échappements provenant de deux moteurs diesel par l'emulsification de l'eau dans le carburant a été étudiée pour déterminer l'applicabilité de tels systèmes en milieu souterrain.

124

De Korompay, V. "Proposed procedure for using a 'Hydraulic Pot' for measuring the effect of the revegetation on the hydraulic and radiation conditions of uranium tailings ponds"; MRP/MRL 79-65 (OPJ); présenté à Can Soc Civil Eng Conf; Montréal (P.Q.); 7-8 juin 1979. (Sera publié dans Minerals and Environ J; Londres (R.-U.).)

On décrit une méthode d'employer un "pot hydraulique" mis au point pour mesurer l'effet du reboisement sur les propriétés hydrauliques et de rayonnement des stériles d'usine d'uranium entreposés dans les étangs de surface. Ce "pot hydraulique" consiste d'une combinaison d'un pot de semences, un appareil d'essais hydraulique à multiples fonctions et une couverture ouverte pour la collecte du radon et permet de mesurer les

propriétés physiques des stériles pendant la croissance de la végétation semée dans le pot.

125

Gangal, M. "Standard procedures for the use of barometers, pressure gauges and the measurement of friction factors"; MRP/MRL 79-64 (OP); présenté au sous-comité sur la ventilation à Elliot Lake/Sudbury Ventilation Group Meeting ayant eu lieu à Rio Algom Mines Ltd., Elliot Lake (Ontario); 24 jan. 1979.

Une brève description des baromètres anéroides et des manomètres indicateurs de pression est donnée suivie des instructions pour leur utilisation. De plus, une méthode pour calculer le facteur de friction des voies d'aérage est décrite.

126

Knight, G. "Personal dust sampling for asbestos: A position paper"; MRP/MRL 79-88 (OP); présenté à CAN/EEC Experts Asbestos Sub-Group; Montréal (P.Q.); 21 fév. 1980.

On y présente divers facteurs qui influencent les méthodes d'échantillonnage des poussières dans les usines d'amiante. On suggère la mise au point de la sélection granulométrique de particules respirables pour l'échantillonnage personnel et présente une meilleure manière d'estimer le taux d'exposition que les techniques d'échantillonnage actuelles.

127

Knight, G. "Novel methods for measuring asbestos: A position paper"; MRP/MRL 79-89 (OP); présenté à CAN/EEC Experts Asbestos Sub-Group; Montréal (P.Q.).

On y énumère plusieurs possibilités d'améliorer les techniques actuelles de mesurer les fibres d'amiante dans l'air. Il s'agit d'aligner la fibre dans les champs magnétiques ou électriques. Ces techniques comprennent l'analyse de l'image, la méthode de diffraction optique, les techniques de diffusion de la lumière, la diffraction des rayons X et les techniques infrarouge.

128

Knight, G., Kirk, B., Sutarno, R. et Stefanich, W. "Personal dust sampling in mines: Statistical analysis"; MRP/MRL 79-14 (OP); présenté à Int Vent Congr; Reno (Nevada); nov. 1979. (Sera publié dans le procès verbal de la conf.).

On démontre que l'exposition à la poussière de tous les mineurs souterrains varie beaucoup d'une journée à l'autre même lorsque chaque homme fait le même travail à la même place. Cette variable observe une distribution logarithmique

normale et une déviation géométrique d'environ 1,6 pour la poussière respirable totale, la poussière respirable combustible et la poussière respirable de quartz. Cette variable était homogène pour tous les hommes et pour la plupart des travaux. La différence entre les hommes qui effectuent le même travail n'était pas importante. Dans ce rapport, il est suggéré que l'échantillonnage des poussières détermine une moyenne pour chacun des travaux et qu'on l'emploie comme le meilleur estimé d'exposition individuelle.

129

Mogan, J.P. et Dainty, E.D. "Assessment of diesel exhaust treatment options by a new diesel ventilation criterion"; MRP/MRL 79-13 (OP); présenté à 2nd Int Mine Vent Congr; Reno (Nevada); 4-8 nov. 1979.

L'adjudicataire de recherche a mis au point un index sur les effets sur la santé des additifs pour les principaux constituants toxiques des gaz d'échappement diesel. Les caractéristiques sont basées sur la réponse physiologique à un mélange de produits polluants. Comme un plus grand nombre de constituants des échappements sont considérés, l'index représente une amélioration importante sur les critères de dilution existants des échappements diesel.

130

Mogan, J.P., Ferguson, S., Sarin, N. et Stewart, D.B. "Factors affecting explosion pressures in flameproof diesel exhaust systems"; ERP/MRL 79-36 (IR&OP); présenté à XVIII Int Safety Mines Res Conf, Yougoslavie; oct. 1979 et dans Proc.

Des travaux de recherche ont été entrepris au Laboratoire canadien sur les atmosphères explosives du CANMET sur la réduction de la pression interne de l'explosion de systèmes anti-déflagrants d'échappement diesel dans le but de rendre ces systèmes plus sûres et plus économiques. Les résultats des essais et les directives de conception proviennent d'une étude effectuée sur un montage ajustable d'épuration des eaux. Les résultats indiquent qu'un concept de pression minimale nécessite une petite série d'essais d'explosion sur un prototype.

131

Savich, M. "Development of a noise monitor hat"; MRP/MRL 79-40 (OP); présenté à 18th Int Conf Sci Res Work Safety, Yougoslavie; oct. 1979.

Les essais préliminaires en laboratoire et dans les mines effectués sur l'efficacité des casques pour le contrôle du bruit sont présentés. Sa précision pour la mesure de l'exposition au bruit est plus élevée que les normes.

LABORATOIRES DE RECHERCHE EN MÉTALLURGIE PHYSIQUE

132

Buhr, R.K. "Foundry research at CANMET"; MRP/PRML 79-67 (OPJ); présenté à AM Fdy Soc Conf; Toronto; 28 sept. 1979.

Un bref résumé est présenté de plusieurs projets de recherche en cours au PMRL ayant trait à la fonderie: une étude des ressources techniques de la fonderie; une étude de l'efficacité de fusion du cubilot; une technique d'application sur les pièces coulées d'un enduit résistant à l'abrasion; le traitement thermique inter-critique des aciers moulés.

133

McGrath, J.T., Godden, M.J., Gordine, J. et Boyd, J.D. "Fracture resistance of pipeline weldments"; ERP/MRP/PMRL 79-48 (OPJ); Can Metall Q 19:1; 1980.

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DIVISION DE L'INFORMATION TECHNOLOGIQUE



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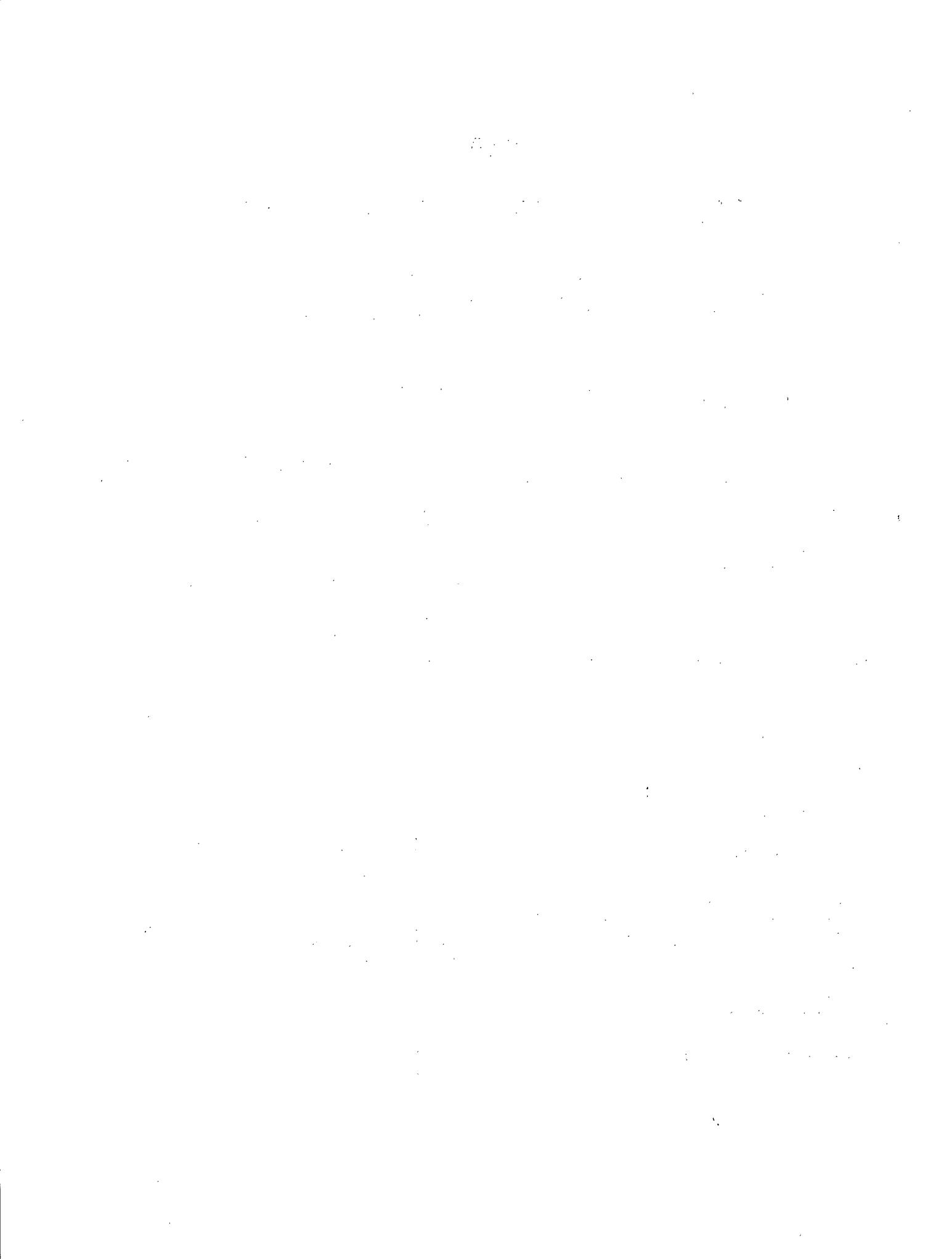
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- 425 "Bitumen content analysis for Mining Research Laboratories, EMR"; Jha, Kamal N. et Strausz, Otto P.; University of Alberta
Contract OST78-00047 - 3 p
- 426 "Computer model for stress-strain analysis of oil-sand"; Thurber Consultants Ltd.
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- 427 "Development of a bench scale fluidized bed coal gasifier and gas burner system"; Plett, E.G., Hosny, N.M. et Khalil, M.B.
Contract OSU77-00413 - 79 p
- 428 "Development of an industrial burner for using gases of low calorific value"; Canadian Gas Research Institute
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- 430 "Emission control of a Detroit diesel, 8V 71N engine derated for underground use"; Ontario Research Foundation
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- 433 "Investigations of waterways formation limestones"; Golder Associates
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- 434 "Kinetic studies relating to gasification of coal characterization and reactivity of thin carbon films"; Chen, C.-J. and Back, M.H., Université d'Ottawa
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- 435 "Lab Nos. 79 7043 SC; 79 7043 DA3; 79 7043 WA3; 79 7043 WA5; 79 7043 WA10; 79 7043 DA10"; Warnock Hersey Professional Services
Contract OSQ78-00026 - 26 p
- 436 "Molybdenum and niobium on the hot working of line-pipe steels/effect of"; Jonas, J.J., Université McGill
Contract OSU77-00419 - 11 p
- 437 "Solubility of cuprous chloride in chloride media"; Itzkovitch, I.J., Ontario Research Foundation
Contract OSQ78-00221 - 100 p
- 438 "Thermal dewatering of lignite"; Saskatchewan Power Research and Development Centre
Contract OSQ78-00017 - 129 p
- 439 "Technical and economic assessment of horizontal continuous casting of steel"; Ferrco Eng. Ltd.
Contract OSQ78-00197 - 118 p



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RAPPORTS SUR LES PROGRAMMES DE RECHERCHE EFFECTUÉE EN COLLABORATION

Les rapports suivants ne sont pas disponibles au CANMET. On peut obtenir des copies en s'adressant à l'auteur.

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Kouame, D., Hodouin, D. et Everell, M.D. Rapport d'avancement, Annexe I: "Etude du comportement de deux arrangements de l'unité de deschlammage expérimental de Niobec Services TMG, Inc." , Québec, Université Laval, Département de Mines et Métallurgie, août 1979

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Amany, G., Rapport d'avancement, Annexe II: "Etude et simulation de broyeurs à barres industriels", septembre 1979

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Groupe de recherche en automatisation appliquée à l'industrie minérale, Projet: "Dimensionnement de circuits industriels de comminution", octobre 1979

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Bland, C.J. et Gonzales, D.E. "A study to investigate the use of manganese impregnated fibre for the removal of dissolved radionuclides from mine discharges" Calgary, University of Calgary, Physics Department, mai 1979

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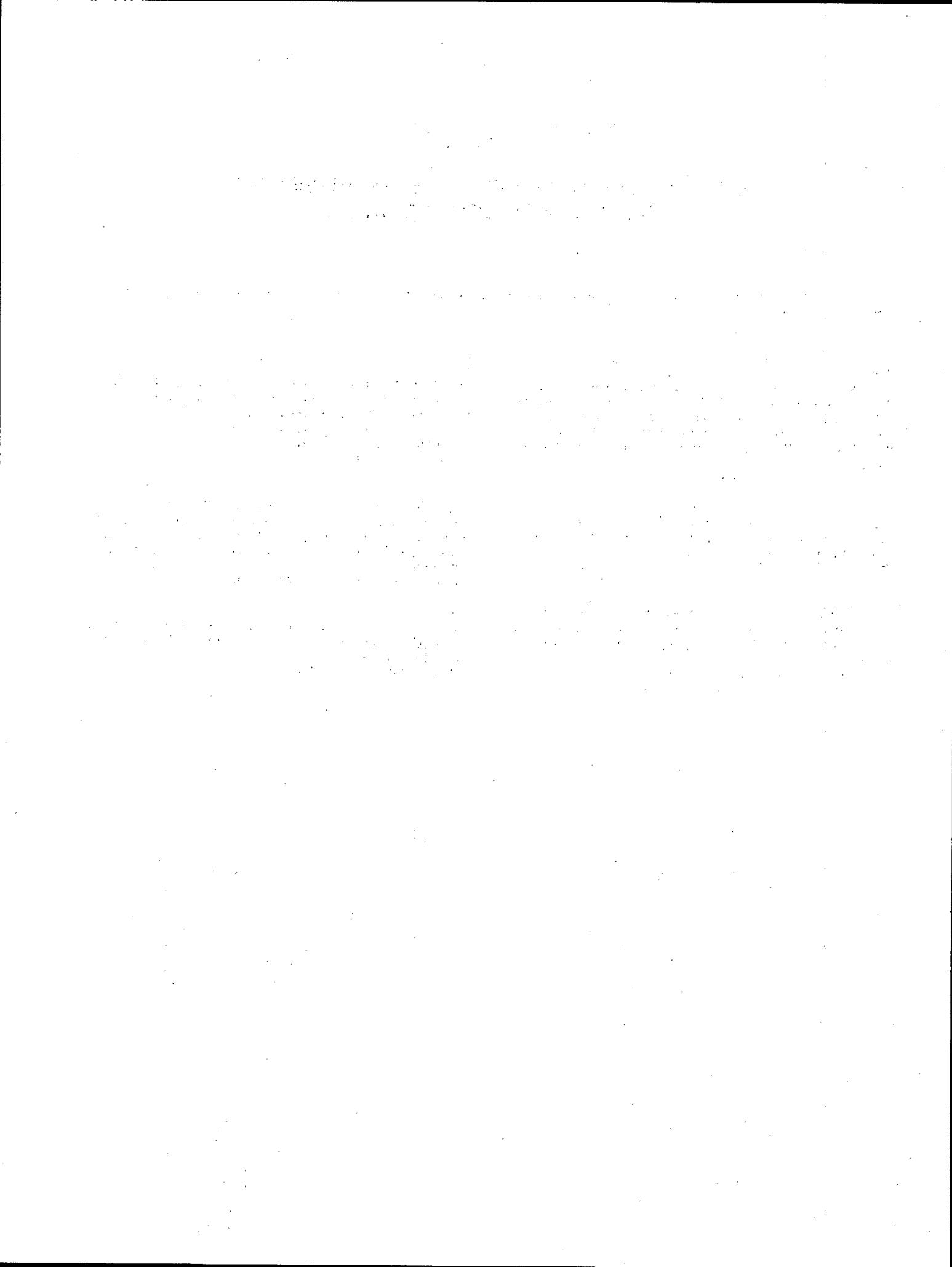
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Kai Kwok Cheng "Digital simulation of a flotation circuit", Vancouver, University of British Columbia, juin 1979

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SONDAGE

L'opinion des lecteurs intéressés peut influencer l'orientation future des recherches à CANMET.

Nous vous invitons, donc, à évaluer le rapport - n° _____
Est-il utile? Oui _____ Non _____
Traite-t-il d'un problème de l'industrie? Oui _____ Non _____
Le sujet est-il prioritaire? Oui _____ Non _____

Commentaires _____

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Centre canadien
de la technologie
des minéraux
et de l'énergie

CATALOGUE OF CANMET PUBLICATIONS 1979/80

MINERALS AND ENERGY RESEARCH PROGRAMS
TECHNOLOGY INFORMATION DIVISION



Energy, Mines and
Resources Canada

Énergie, Mines et
Ressources Canada

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CATALOGUE OF CANMET PUBLICATIONS 1979/80

Publications and papers published or presented by
CANMET scientific and technical staff in 1979/80.

Compiled and edited by J.L. Metz
French translation by J. Collins-DeCotret

MINERALS AND ENERGY RESEARCH PROGRAMS
TECHNOLOGY INFORMATION DIVISION

FOREWORD

A compilation is presented of publications and papers prepared by CANMET scientific and technical staff during 1979/80 as well as research reports prepared by outside agencies under contract. Information for obtaining publications precedes each section. An author/subject index is also provided.

Section 1 lists titles and abstracts of CANMET Reports for general distribution and sale.

Section 2 gives titles and abstracts of journal publications prepared for outside periodicals.

Section 3 covers oral presentations made to outside conferences.

Section 4 contains divisional and declassified reports which provide results of investigations initiated by CANMET or at the request of industry or government agencies.

Section 5 lists reports prepared by private research agencies under contract to CANMET with regard to studies on national mineral resources and energy supply and technology.

Section 6 covers reports describing research performed by outside agencies supported through financial grants by CANMET.

James E. Kanasy,
Chief,
Technology Information Division

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SECTION 1

CANMET REPORTS

The reports listed below are available at prices indicated from either Printing and Publishing, Supply and Services Canada, Ottawa, K1A 0S9 or CANMET Publication Sales and Distribution, Energy, Mines and Resources Canada, 555 Booth Street, Ottawa, K1A 0G1. Microfiche copies may be obtained from Micromedia Limited, Box 502, Station S, Toronto, Canada, M5M 4L8.

001

CANMET REPORT 78-1. Misener, D.C. "Summaries of CANMET research contracts 1975-1978"

A compilation of contract summary sheets is provided of the R & D performed by CANMET in accordance with government contracting-out policy.
Cat. No. M38-13/78-1 - 48 p
Canada \$1.25; other countries \$1.50

002

CANMET REPORT 78-7. Knight, G. "Mine dust sampling system - CAMPEDS"

A record is provided of experimental work at CANMET's Elliot Lake Laboratory in developing a method of dust sampling for mines using both gravimetric assessment and X-ray diffraction analysis for quartz.
Cat. No. M38-13/78-7 - 107 p
Canada \$3.50; other countries \$4.20

003

CANMET REPORT 78-12F. "Revue de CANMET 1977/78"

This review records progress achieved by CANMET staff during 1977/78 in implementing the department's Minerals Research Program and Energy Research Program.

Cat. No. M38-13/78-12F - 64 p
Canada \$2.25; other countries \$2.70

004

CANMET REPORT 78-17. Bartlett, G. and Coates, D.F. "Pit slope project - A case study of contracting-out"

A detailed analysis is given of research performance using the Pit Slope Project as a case study of multi-faceted R & D performed under contract.

This study led to the recommendation of a budgeting procedure which, together with Treasury Board guidelines would provide an optional division between in-house and contract performance.
Cat. No. M38-13/78-17 - 18 p
Canada \$1.00; other countries \$1.20

005

CANMET REPORT 78-18. "Catalogue of CANMET publications 1977/78" (English and French)

A compilation is presented of publications and papers prepared by CANMET scientific and technical staff in 1977/78 comprising CANMET Reports, journal publications, oral presentations, investigation, and declassified reports.

Research reports prepared by outside agencies under contract are also included.

Cat. No. M38-13/78-18 - 71 p
Canada \$6.00; other countries \$7.20

006

CANMET REPORT 78-21. Bell, K.E., Brady, J.G. and Zemgals, L.K. "Ceramic clays and shales of the Atlantic Provinces"

Representative samples of typical clays and shales indigenous to the Atlantic region were examined to determine their composition and salient ceramic properties. The results and discussion along with those contained in earlier reports on B.C., Ontario and Quebec constitute a contribution to the knowledge base necessary to ensure the orderly and efficient development of the ceramic industry in Canada.
Cat. No. M38-13/78-21 - 89 p
Canada \$3.00; other countries \$3.60

007

CANMET REPORT 78-23. Petruk, W. "Image analysis study of mill products from batch tests on Brunswick Mining and Smelting tailings"

A study was performed to determine the behaviour of sphalerite during laboratory batch tests or recovering zinc from a sample of Brunswick Mining and Smelting mill tailings containing 1.8 wt % zinc. This report summarizes image analysis data, interprets the behaviour of sphalerite, and extrapolates results to predict the ultimate possible zinc recovery.
Cat. No. M38-13/78-23 - 12 p
Canada \$1.25; other countries \$1.50

008

CANMET REPORT 78-28. Hedley, D.G.F. "Canadian base metal mining in the 1970's"

An overview is presented of the Canadian base metal mining industry. Information is provided on source of production, mining methods, number and size of mines, employment figures, costs, and productivity.
Cat. No. M38-13/78-28 - 11 p
Canada \$1.25; other countries \$1.50

009

CANMET REPORT 78-30. Gransden, J.F., Price, J.T. and Ramey, N.J. "Reduction rates of iron ore-char briquets used in cupola smelting"

CANMET examined the potential of the Peace River deposit as a source of iron for the

steel industry in Western Canada. An unconventional ironmaking method was investigated - the smelting of iron ore-char briquets in a cupola. This report describes the reduction behaviour of the briquets as determined in laboratory experiments.

Cat. No. M38-13/78-30 - 15 p
Canada \$1.25; other countries \$1.50

010

CANMET REPORT 79-1. Raicevic, D. and Noblitt, H.L. "Tantalum and niobium ore dressing investigations at CANMET"

Tantalum and niobium are described in terms of properties, uses and resources, both domestic and global. Production and consumption statistics are given for both metals. Appendices provide brief reviews of ore dressing investigations related to the mineralogy and concentration of Canadian ores conducted at CANMET. It also covers research on foreign niobium ores considered of interest in treating domestic ores.

Cat. No. M38-13/79-1 - 66 p
Canada \$3.85; other countries \$4.65

011

CANMET REPORT 79-2. Wheat, T.A. "Synthesis and characterization of zirconia electrolytes for potential use in energy conversion systems"

As part of a program to develop ionically conducting materials for potential use in energy storage and conversion systems, a study was made to determine the stability of various compositions in the CaO-ZrO₂ system for fuel cell and MHD applications. This report covers the microstructural aspects of powder synthesis and the development of sintered materials.

Cat. No. M38-13/79-2 - 28 p
Canada \$1.75; other countries \$2.10

012

CANMET REPORT 79-3. Bowman, W.S., Faye, G.H., Sutarno, R., McKeague, J.A. and Kodama, H. "Soil samples SO-1, SO-2, SO-3 and SO-4 - Certified reference materials"

This report describes the preparation, characterization and certification of four soil samples for use as certified reference materials. The samples were certified for Al, Fe, Mn, K, Zn, Cu, Cr and Pb, and one or more were certified for Si, Na, Mg, Ca, P, Ti, Hg, Ni, Sr and V.

Cat. No. M38-13/79-3 - 32 p
Canada \$1.75; other countries \$2.10

013

CANMET REPORT 79-4. Faye, G.H., Bowman, W.S. and Sutarno, R. "Uranium ore BL-5 - A certified reference material"

A uranium ore BL-5 was prepared as a compositional reference material. In a "free-choice" program for certification, 27 laboratories provided analytical results; a statistical treatment of the data yielded a consensus value of $7.09 \pm 0.03\%$. Information is also provided on the state of radioactive equilibrium of BL-5 and its content of Ra-226, Pb-210 and Th-230.

Cat. No. M38-13/79-4 - 11 p
Canada \$1.25; other countries \$1.50

014

CANMET REPORT 79-5. Kim, C., Wolff, S.F., Baafi, E.Y. and Cervantes, J.A. "Optimization of coal recovery from open pits"

The design techniques of the 25-volume Pit Slope Manual were successfully applied in the case study of a steeply dipping multiple seam deposit, being mined by the truck-shovel combination. A benefit-cost analysis is presented for three different pit designs having overall slopes of 45°, 28° and 35°.

Cat. No. M38-13/79-5 - 175 p
Canada \$11.75; other countries \$14.10

015

CANMET REPORT 79-6. White, D.W.G. and Winterton, K. (editors) "Heat-affected-zone toughness of welded joints in micro-alloy steels"

Work was done to evaluate the effects of chemical composition and cooling rate on the notch toughness of the heat-affected-zone of welded micro-alloy (HSLA) steel plate. The report provides in separate parts the results of instrumented impact tests, descriptions of continuous cooling transformation characteristics, metallographic analysis of HAZ microstructures and precipitation effects. An appendix contains the individual transition curves for the eight experimental steels welded with five levels of heat input are sixteen curves relating to the stress-relieved condition.

Cat. No. M38-13/79-6 - 107 p
Canada \$5.75; other countries \$6.90

016

CANMET REPORT 79-7. Tibbetts, T.E., Montgomery, W.J. and Faurschou, D.K. "Analysis directory of Canadian commercial coals - Supplement No. 3"

Chemical and physical analyses of thermal and metallurgical coals currently produced by mines in Nova Scotia, New Brunswick, Saskatchewan, Alberta and British Columbia are presented.

Cat. No. M38-13/79-7 - 81 p
Canada \$4.00; other countries \$4.80

017

CANMET REPORT 79-8. Stemerowicz, A.I. and Leigh, G.W. "Flotation techniques for producing high-recovery bulk Zn-Pb-Cu-Ag concentrate from a New Brunswick massive sulphide ore"

This report describes an investigation to develop a batch flotation technique for producing bulk zinc-lead-copper-silver concentrates at a target grade of 30% zinc with the highest possible recovery. Feed assaying 8.73% zinc, 3.95% lead, 0.24% copper and 87.8 g/t silver, produced a bulk concentrate grading 30.0% zinc, 10.75% lead, 0.68% copper and 246.9 g/t silver with recoveries of 95.3, 86.6, 76.7 and 84.6%, respectively.

Cat. No. M38-13/79-8 - 94 p
Canada \$8.00; other countries \$9.60

018

CANMET REPORT 79-9. Prud'homme, P. and Lucas, B.H. "Construction and operation of a continuous ion-exchange pilot plant using fluidized-bed columns"

The development of new simplified ion-exchange equipment for recovering metals from solution is described. It consists of a single-stage deep fluidized-bed extraction column coupled with moving-bed elution and wash columns for extracting different ions from mine water solutions and leach liquors. A procedure for achieving proper utilization and optimum operating conditions is given.

Cat. No. M38-13/79-9 - 10 p
Canada \$1.25; other countries \$1.50

019

CANMET REPORT 79-10. Wilson, H.S. "A comparative study of lightweight aggregates in structural concrete"

Results are given of a comparative study of the physical properties of five lightweight aggregates produced commercially in Canada from clays and shales, and of the properties of structural concretes incorporating these lightweight aggregates. The specimens were prepared, cured and tested in accordance with ASTM specifications.

Cat. No. M38-13/79-10 - 25 p
Canada \$2.00; other countries \$2.40

020

CANMET REPORT 79-11. Hedley, D.G.F., Herget, G., Miles, P. and Yu, Y.S. "CANMET's rock mechanics research at the Kidd Creek mine"

This report describes measuring techniques and their applications, compares measured and predicted deformations and stresses, and evaluates potential modes of failure at the Kidd Creek mine in northern Ontario. An appendix describes the mine's open pit monitoring system.

Cat. No. M38-13/79-11 - 52 p
Canada \$3.50; other countries \$4.20

021

CANMET REPORT 79-12. Hayden, A.C. and Brown, T.D. "Energy cascades in Canada"

Three major applications where the cascade principle offered advantages in fuel conservation and costs over more conventional systems are shown by: (1) a combined cycle energy cascade; (2) total energy gas engine cascade; (3) cogeneration in a district heating scheme.

Cat. No. M38-13/79-12 - 22 p
Canada \$1.75; other countries \$2.10

022

CANMET REPORT 79-13. Taylor, G.W. "Liquid fuels from Canadian coals"

This report represents a consolidation of the knowledge and considered opinions of CANMET scientists on producing liquid fuels from coals in the Canadian context. Several priority areas for R & D are identified, particularly basic engineering, hydrogen supply, coal quality and environmental impact. The main considerations bearing on research and pilot plant strategies are discussed.

Cat. No. M38-13/79-13 - 43 p
Canada \$3.10; other countries \$3.75

023

CANMET REPORT 79-14. Faye, G.H., Bowman, W.S. and Sutarno, R. "Zinc concentrate CZN-1 - A certified reference material"

A zinc concentrate CZN-1 from Kimberley, B.C. was prepared as a compositional reference material. In a "free-choice" analytical program, 30 laboratories contributed results for one or more of 21 elements of CZN-1. Recommended values have been assigned for Ag, Al₂O₃, As, Cd, Cu, Fe, Hg, Mn, Pb, S, Sb and Zn. Also, non-certified values have been determined for: Au, Bi, CaO, In, MgO, Se, SiO₂ and Sn.

Cat. No. M38-13/79-14 - 39 p
Canada \$2.00; other countries \$2.40

024

CANMET REPORT 79-15. Faye, G.H., Bowman, W.S. and Sutarno, R. "Lead concentrate CPB-1 - A certified reference material"

A lead concentrate CPB-1 from Kimberley B.C. has been prepared as a compositional reference material. In a "free-choice" analytical program, 25 laboratories contributed results for one or more of 21 elements of CPB-1. Recommended values have been assigned for: Ag, Al₂O₃, As, Bi, Cd, Cu, Fe, Hg, Pb, S, Sb, SiO₂ and Zn. Also, non-certified values have been determined for: Au, CaO, In, MgO, Mn, Se, Sn, and Te.

Cat. No. M38-13/79-15 - 38 p
Canada \$2.00; other countries \$2.40

025

CANMET REPORT 79-16. Faye, G.H., Bowman, W.S. and Sutarno, R. "Copper concentrate CCU-1 - A certified reference material"

A copper concentrate CCU-1 from Lynn Lake, Manitoba has been prepared as a compositional reference material. In a "free-choice" analytical program, 33 laboratories contributed results for one or more of 18 elements of CCU-1. Recommended values have been assigned for: Ag, Al₂O₃, Au, Cu, Hg, Pb, SiO₂ and Zn. Also, non-certified values have been determined for: As, Bi, CaO, Cd, Fe, MgO, Mo, S, Se and Te.

Cat. No. M38-13/79-16 - 27 p
Canada \$1.45; other countries \$1.75

026

CANMET REPORT 79-17. George, A.E., Smiley, G.T. and Sawatzky, H. "Rapid chromatographic procedure for characterizing hydrocarbons in synthetic fuel naphtha"

This report describes a rapid chromatographic procedure for chemical characterization of the naphtha fraction of synthetic fuels. The procedure provides complete distillation information, sulphur content, hydrocarbon-type distribution analysis of saturates, olefins and aromatics as well as individual identification of major hydrocarbon constituents.

Cat. No. M38-13/79-17 - 12 p
Canada \$2.75; other countries \$3.30

027

CANMET REPORT 79-18. Gransden, J.F. and Leeder, W.R. "Influence of flue temperature and coal preparation on coke quality in 460-mm technical-scale coke oven"

The effect of oven flue temperature, coal moisture and pulverization level on oven operating characteristics and coke quality was determined for a typical industrial coal blend used for making blast furnace coke. The test program was car-

ried out in a 460-mm technical-scale coke oven and from the results the following standard operating conditions were selected: flue temperature - 1125°C; coal moisture - 6%; coal size - 80% minus 3.25 mm.

Cat. No. M38-13/79-18 - 11 p
Canada \$1.50; other countries \$1.80

028

CANMET REPORT 79-19. Hoey, G.R., Dingley, W. and Wiles, C.T. "Test installation for studying erosion-corrosion of metals for coal washing plants"

Erosion-corrosion tests of mild steel panels were conducted using slurries of alumina, quartz, washed coal and coal refuse. Results show that the successful application of corrosion control techniques would reduce metal wastage in coal washing plants.

Cat. No. M38-13/79-19 - 9 p
Canada \$1.10; other countries \$1.35

029

CANMET REPORT 79-20. Sawatzky, H. Beshai, J.E., Smiley, G.T. and George, A.E. "Effect of hydrocracking on the distribution of nitrogenous components in Athabasca bitumen"

The various fractions of nitrogenous and associated polar compounds were examined using infrared spectrometry and titration of the bases. Results showed that carbazoles, indoles and related compounds, particularly in the asphaltenes, increased substantially with hydrocracking severity. Basicity of the hydrocracked products is also discussed.

Cat. No. M38-13/79-20 - 10 p
Canada \$1.25; other countries \$1.50

030

CANMET REPORT 79-21. Itzkovitch, I.J. and Ritcey, G.M. "Removal of radionuclides from process streams - A review"

This report details the origin and control of radium 226, thorium 230 and lead 210 contamination of mill effluent streams from conventional and non-conventional milling of uranium ores, reviews the basic chemistry of the radionuclides as it relates to potential alternatives for control and presents these alternatives along with a summary of published cost data.

Cat. No. M38-13/79-21 - 171 p
Canada \$8.00; other countries \$9.60

031

CANMET REPORT 79-22. Collings, R.K. "Mineral waste resources of Canada Report No. 3 - Mining wastes in British Columbia"

Background information is provided on waste rock and mill tailings in British Columbia. Data on the occurrence, mineralogy, petrography, physical and chemical characteristics of wastes from 27 operating mines are given in tabular form for three principal types of mines - metal, non-metallic or industrial minerals, and coal. Potential uses for certain wastes are noted along with relevant research.

Cat. No. M38-13/79-22 - 36 p
Canada \$2.00; other countries \$2.40

032

CANMET REPORT 79-24. Shmay, R.C. (ed. R.K. Buhr)

"Assessment of the technological capabilities of the Canadian foundry industry"

A comprehensive survey was conducted of the Canadian foundry industry to obtain detailed information of technological capabilities. Results were summarized and are presented for the benefit of the industry and public at large.

Cat. No. M38-13/79-24 - 21 p
Canada \$3.25; other countries \$3.90

033

CANMET REPORT 79-24F. Shmay, R.C. (ed. R.K. Buhr) "Evaluation des ressources technologiques de l'industrie canadienne de la fonderie"

Abstract given in CANMET Report 79-24.
Cat. No. M38-13/79-24F - 25 p
Canada \$3.25; other countries \$3.90

034

CANMET REPORT 79-25. "CANMET Review 1978/79"

Assuring effective utilization of minerals and energy, developing new technology, and assuring the availability of energy from innovative as well as traditional sources are the prime functions of the Canada Centre for Mineral and Energy Technology (CANMET). This review presents highlights during 1978-79 of the various CANMET activities and projects.

Cat. No. M38-13/79-25 - 56 p
Canada \$4.25; other countries \$5.10

035

CANMET REPORT 79-27. Cabri, L.J. and Laflamme, J.H.G. "Mineralogy of samples from the Lac des Iles area, Ontario"

Samples from the Lac des Iles area, Ontario were investigated to determine the mineralogy and distribution of the platinum-group elements from different areas and rock types. Mineralogical determinations together with data on mineral associations and size variations are presented.

Cat. No. M38-13/79-27 - 20 p
Canada \$1.00; other countries \$1.20

036

CANMET REPORT 79-28. Malhotra, V.M. "Sulphur concrete and sulphur infiltrated concrete: Properties, applications and limitations"

This report consists of two parts: the first discusses the development of sulphur concrete, gives its mechanical properties, advantages and limitations; the second describes sulphur-infiltrated concrete and discusses its mechanical properties, durability, applications and limitations.

Cat. No. M38-13/79-28 - 26 p
Canada \$2.25; other countries \$2.70

037

CANMET REPORT 79-29. Coates, D.F., Larocque, G. and Geller, L. "Geological disposal of high-level radioactive wastes"

Wastes from nuclear generating stations are highly radioactive and involve serious human and environmental problems which remain to be solved. Disposal problems are explained and the suggestion is made that deep underground burial in mined-out facilities in igneous rocks would be acceptable.

Cat. No. M38-13/79-29 - 21 p
 Canada \$1.50; other countries \$1.80

038

CANMET REPORT 79-30. Malhotra, V.M. and Carette, G.G. "In situ testing for concrete strength"

This report describes methods for estimating in situ strength of concrete, i.e., surface hardness tests; rebound and penetration techniques, pullout and breakoff methods; pulse velocity techniques, combined methods approach and maturity concept.

Cat. No. M38-13/79-30E - 20 p
 Canada \$1.75; other countries \$2.10

039

CANMET REPORT 79-31. Malhotra, V.M. "Superplasticizers: Their effect on fresh and hardened concrete"

This report briefly describes the main types of superplasticizers available in North America, discusses their mode of action, and describes their effect on the properties of fresh and hardened concrete. Although satisfactory for present concrete, problems associated with slump loss has remain to be solved for use in ready-mixed concrete.

Cat. No. M38-13/79-31 - 23 p
 Canada \$2.00; other countries \$2.40

040

CANMET REPORT 79-32. Berry, E.E. "Concrete made with supplementary cementing materials"

Slag, fly ash and pozzolan are produced by less energy intensive procedures than the portland cement they replace, hence their use in making concrete reduces total energy consumption and construction costs. This report provides a state-of-the-art review of supplementary cementing materials and urges further research to improve quality control, develop specification tests and assess long-term performance.

Cat. No. M38-13/79-32 - 17 p
 Canada \$2.25; other countries \$2.70

041

CANMET REPORT 79-33. Wilson, H.S. "Lightweight aggregates: Properties, applications and outlook"

This report describes the various properties and applications of lightweight aggregates produced from clay, shale, slate, fly ash and blast furnace slag, and discusses production methods. Their main advantages in concrete masonry units are decreasing the weight of structures by

20 to 30% and doubling the thermal resistance. Escalating fuel costs for producing such aggregates require process improvements to remain economically competitive with conventional aggregates.

Cat. No. M38-13/79-33 - 23 p
 Canada \$2.25; other countries \$2.70

042

CANMET REPORT 79-34. Adams, C.J. "Recycling of steel plant waste oxides - A review"

Large quantities of ferruginous waste material are produced at steel plants as a byproduct of iron and steelmaking processes. This review outlines the sources and types of waste material generated and documents the processes developed to recycle them.

Cat. No. M38-13/79-34 - 13 p
 Canada \$1.50; other countries \$1.80

043

CANMET REPORT 79-38. Malhotra, V.M. "Strength and freeze-thaw characteristics of concrete incorporating granulated blast furnace slag"

Portland cement is a highly energy intensive material. Attempts are thus being made to find substitutes which are less energy intensive to partially replace cement in concrete. This report gives results of laboratory investigations to determine the strength and freeze-thaw durability characteristics of concrete incorporating granulated iron blast furnace slag. Although slag has shown considerable potential as a partial replacement for portland cement, it generally reduces the compressive strength and further research is recommended.

Cat. No. M38-13/79-38 - 26 p
 Canada \$2.25; other countries \$2.70

044

CANMET REPORT 80-4E. Gransden, J.F., Price, J.T. and Leeder, W.R. "Cokemaking with Canadian medium- and high-volatile commercial coking coals"

Questions about future availability of imported premium quality coking coal for Canadian steel mills has prompted an investigation of domestic coal. Blends of low ash, high sulphur Eastern coals with high ash low sulphur Western coals produced coke with suitable chemical and physical properties - all blends had low coking pressure and could be coked in industrial ovens. The various tests are described.

Cat. No. M38-13/80-4E - 29 p
 Canada \$2.25; other countries \$2.70

SECTION 2

JOURNAL PUBLICATIONS

Papers are available only from the journal or proceedings cited, or by direct request to the author.

MINERAL SCIENCES LABORATORIES

045

Barkley, D.J. "The nonaqueous potentiometric determination of commercial benzophenone oxime (L1X) extractants"; Anal Chim Acta 105:83-89; 1979.

A nonaqueous potentiometric method for determining substituted benzophenone oxime reagents (L1X) used as extractants in copper extraction processes is described.

046

Bowman, W.S., Faye, G.H., Sutarno, R., McKeague, J.A. and Kodama, H. "New CCRMP reference soils SO-1 to SO-4"; Geostandards Newsletter 3:2:109-113; 1979.

Information is given on the preparation, characterization, and certification of soil samples SO-1 to SO-4 for use as certified reference materials.

047

Cabri, L.J., Rowland, J.F., Gilles, J.H.G. and Stewart, J.M. "Keithconnite, telluro palladinite and other Pd-Pt tellurides from the Stillwater complex, Montana"; Can Mineral 17:589-594; 1979.

Mineralogical studies of rock samples and heavy mineral concentrates from the Banded and Upper zones of the Stillwater complex, Montana, have revealed rich and diverse assemblages of platinum-group minerals (PGM). This paper describes the new minerals keithconnite and telluro palladinite, as well as three other PG-tellurides.

048

Donaldson, Elsie M. "Determination of antimony in concentrates, ores and non-ferrous materials by atomic-absorption spectrophotometry after iron-lanthanum collection, or by the iodide method after further xanthate extraction"; Talanta 26: 999-1010; 1979.

Methods for determining trace and moderate amounts of antimony in copper, nickel, molybdenum, lead and zinc concentrates and in ores are described.

049

Donaldson, Elsie M. "Determination of bismuth in ores, concentrates and non-ferrous alloys by atomic-absorption spectrophotometry after separation by diethyldithiocarbamate extraction or iron collection"; Talanta 26:1119-1123; 1979.

Two simple, reliable and moderately rapid

atomic-absorption methods for determining trace and minor amounts of bismuth in copper, nickel, molybdenum, lead and zinc concentrates and ores, and in non-ferrous alloys, are described. Results obtained by both methods are compared with those obtained spectrophotometrically by the iodide method after the separation of bismuth by DDTc and xanthate extractions.

050

Haque, K.E. "Carbonate rock - A resource for energy"; Energy Sources 4:1; 1978

A brief account of various research reports available in the literature on the catalytic hydrogenation of carbon dioxide is presented. Carbonate rock is advanced as a potential source of products that might serve either as feedstocks for petrochemical industries or for production of energy.

051

Hitchen, A. "The differential pulse polarographic determination of trace amounts of tin and its application to zinc-aluminum alloys"; Talanta 26:369-372; 1979.

A differential pulse polarographic procedure for determining 0.001-0.02% Sn in zinc-aluminum alloys is described.

052

Jambor, J.L. "Mineralogical evaluation of proximal-distal features in New Brunswick massive-sulphide deposits"; Can Mineral 17:649-664; 1979.

A tentative classification of most of the Bathurst-area deposits in New Brunswick is made with reference to their established or assumed displacement from feeder conduits (proximal versus distal) and position of sulphide crystallization (autochthonous versus allochthonous).

053

Kodama, H. and Dean, R.S. "Illite from Eldorado, Saskatchewan"; Can Mineral 18:109-118; 1980.

Chemical composition, X-ray diffraction and electron microscopy revealed that the 0.07 to 2 μm fraction of a sample of mudstone from Eldorado was exceptionally pure illite. It was characterized and its mineralogical details are given.

054

Leclerc, A. and Townsend, M.G. "Quadrupole splitting and ground state in FeS and NiS (^{57}Fe)"; J

Phys Chem Solids 40:1069-1072; 1979.

From a Mössbauer study of an oriented single crystal of $\text{Ni}_{0.996}\text{S}$ (2% Fe^{57}) at 298 K (above the metal-insulator transition at $\sqrt{230}\text{K}$) the sign of the quadrupole splitting in Fe^{57} is determined to be positive; this contrasts with a negative sign found for FeS and $\text{Fe}_{0.93}\text{S}$. A tentative model is presented that is consistent with these results and with magnetic anisotropy data.

055

MacKinnon, D.J., Brannen, J.M. and Kerby, R.C. "The effect of cadmium on zinc deposit structures obtained from high purity industrial acid sulphate electrolyte"; J Appl Electrochem 9:603-613; 1979.

The effect of cadmium on cathodic zinc crystal growth was studied in high purity industrial electrolyte, with and without additives, in an attempt to establish a correlation between morphology, polarization and the extent of cadmium contamination. Results are given.

056

MacKinnon, D.J., Brannen, J.M. and Kerby, R.C. "The effect of lead on zinc deposit structures obtained from high purity synthetic and industrial acid sulphate electrolytes"; J Appl Electrochem 9:55-70; 1979.

Results are described of a study undertaken in zinc electrolysis to determine the effect of Pb contamination on the morphology and orientation of zinc deposits obtained from acid sulphate electrolytes and to determine the effect of Pb on the polarization behaviour and current efficiency of zinc deposition in relation to any significance it may have with respect to controlling the process using polarization techniques.

057

Makhija, R. and Hitchen, A. "The titrimetric determination of sulphate, thiosulphate and polythionates in mining effluents"; Anal Chim Acta 105:375-382; 1979.

A titrimetric procedure is proposed for determining various forms of sulphur in mining effluents. Results obtained are in good agreement with those obtained by lengthy gravimetric procedures.

058

Petrak, W. "Correlation between grain sizes in a polished section with sieving data and an investigation of mineral liberation measurements from polished sections"; Inst Min Metall Sec C 87:C271-277; 1978.

Samples of known material were analyzed with a Quantimet 720 image analyser to (1) correlate size distributions as obtained by screening with size distributions for grains as observed in polished sections and (2) to investigate mineral liberation measurements from polished sections.

059

Ritcey, G.M. "Crud in solvent extraction processing - A review of causes and treatment"; Hydrometallurgy 5:97-107; 1980.

An overview is presented on the various aspects of affecting solvent loss through crud formation encountered in many hydrometallurgical plants that employ solvent extraction processing.

060

Smith, C.W. and Dalton, J.L. "Application of EDXRF analysis to the determination of metallic elements in airborne mineralogical dusts"; Can J Spectrosc 24:6:163-171; Nov.-Dec. 1979.

Objective was to examine the potential of EDXRF to measure other elements than silica in particulate matter collected from the CAMPEDS system. The equipment was known to have sensitivity and took a reasonable time.

Calibration techniques are described and optional modifications are suggested to increase sensitivities for particular elements and to expand the scope to other elements.

061

Steger, H.F., Faye, G.H., Bowman, W.S. and Sutarno, R. "New CCRMP reference uranium ore BL-5 and sulphide concentrates CCU-1, CPB-1 and CZN-1"; Geostandards Newsletter 3:2:173-175; 1979.

Information is presented on the preparation, characterization, and certification of uranium ore BL-5 and a suite of chalcopyrite, galena and sphalerite concentrates, CCU-1, CPB-1 and CZN-1, respectively.

062

Stewart, J.M. and Szymanski, J.T. "A redetermination of the crystal structure of potassium tri-thionate, $\text{K}_2\text{S}_3\text{O}_6$ "; Acta Crystallogr B 35:1967-1970; 1979.

The tri-thionate ion is one of the constituents of thiosalt waste of the flotation circuit process. This paper reports the re-examination of the crystal structure of potassium tri-thionate as part of an overall program to decrease industrial pollution.

063

Stewart, J.M. and Szymanski, J.T. "The crystal structure of potassium tetrathionate, $\text{K}_2\text{S}_4\text{O}_6$ "; Acta Crystallogr B 35:1971-1974; 1979.

The crystal structure of potassium tetrathionate was determined in a study of waste effluents from sulphide mining operations.

064

Szymanski, J.T. "The crystal structure of platarsite, $\text{Pt}(\text{As},\text{S})_2$, and a comparison with sperrylite, PtAs_2 "; Can Mineral 17:117-123; 1979.

The structures of platarsite and sperrylite were examined to accurately determine their relationship.

065

Szymanski, J.T. "The crystal structure of tetra-aqua-cis-dichloroiron (III) tetrachloroferate (III) monohydrate (ferric chloride 2 1/2-hydrate)"; Acta Crystallogr B 35:1958-1963; 1979.

This paper reports the results of the first of three crystal structure determinations of the three lower ferric chloride hydrates. This work was a first step in the study of reaction mechanisms of sulphide leaching reactions.

066

Townsend, M.G., Webster, A.H. and Horwood, J.L. "Ferrimagnetic transition in $\text{Fe}_{0.9}\text{S}$: magnetic, thermodynamic and kinetic aspects"; J Phys Chem Solids 40:183-189; 1979.

This paper provides results of a study made on single crystals by specific heat, Mossbauer spectroscopy and magnetic susceptibility of

the magnetic structure and kinetics and thermodynamics of formation of the ferrimagnetic component of antiferromagnetic $\text{Fe}_{0.9}\text{S}$.

ENERGY RESEARCH LABORATORIES

067

Bancroft, G.M., Gupta, R.P., Hardin, A.H. and Ternan, M. "Quantitative electron spectroscopy for chemical analyses of bitumen processing catalysts"; Anal Chem 51:2102; 1979.

An investigation is described and results given from a study using X-ray photoelectron spectroscopy to analyze a large number of $\text{Mo}/\text{Al}_2\text{O}_3$ hydrodesulphurization catalysts containing nickel and cobalt as promoters.

068

Hayden, A.C.S. "How does ambient temperature affect economy and emissions?"; J Soc Auto Eng 87:1; 1979.

Results are presented from a recent study by the Canadian Combustion Research Laboratory of CANMET on the effects of ambient temperature on economy and emissions of diesel, stratified charge, lean burn, and turbocharged knock-limit engines and comparing these with conventionally-carburated catalyst-equipped automobiles.

069

Hayden, A.C.S. and Braaten, R.W. "Efficient residential oil-heating systems - A manual for servicemen, designers and builders"; Report EL79-8; (This report is available on request from Conservation and Renewable Energy Branch, 580 Booth Street, Ottawa, Ont. K1A 0E4).

This manual is intended as a guide to improve the efficiency of domestic oil-fired systems, both by changing or expanding the emphasis of periodic maintenance and by actual physical modifications to the heating system.

070

Kelly, J.F. and Ternan, M. "Hydrocracking Athabasca bitumen with alkali metal promoted $\text{CoO}/\text{MoO}_3/\text{Al}_2\text{O}_3$ catalysts"; Can J Chem Eng 57:726-733.

Alkali metal promoters (lithium, sodium

and potassium) were added to catalysts used to hydrocrack Athabasca bitumen to decrease the coke deposition which causes catalyst deactivation. Results are explained in terms of changes in catalyst electronic properties caused by adding the promoters.

071

Ranganathan, R., Pruden, B.B., Ternan, M. and Denis, J.M. "Evaluation of a two-stage thermal and catalytic hydrocracking process for Athabasca bitumen"; Am Chem Soc Advances in Chem, No. 179: 54-66.

A two-stage thermal and catalytic hydrocracking process for upgrading Athabasca bitumen is described. Three catalysts - cobalt-molybdenum on alumina, nickel-molybdenum on alumina, and nickel-tungsten on alumina - are evaluated in the catalytic hydrocracking stage and their selectivities are compared.

072

Sekhar, M.V.C. and Ternan, M. "Thermogravimetric studies on catalytic and noncatalytic pyrolysis of pitch derived from hydrocracked Athabasca bitumen"; Am Chem Soc 15:183:259.

Results are given from a study to determine the pyrolytic behaviour of a hydrocracked vacuum residuum in an inert atmosphere in the presence and absence of an alumina catalyst using thermogravimetric techniques.

073

Ternan, M. and Fuller, O.M. "A comparison of methods used to measure pore size in solids"; Can J Chem Eng 57:750-757; 1979.

A comparison is presented of measuring the size of pores in a number of solid samples by nitrogen adsorption, oxygen adsorption, mercury porosimetry, scanning electron microscopy, and optical microscopy.

PHYSICAL METALLURGY RESEARCH LABORATORIES

074

Couture, A. "Effect of iron, antimony, aluminum and silicon contamination on the mechanical properties of four tin bronzes"; Am Fdy Soc Trans 79: 50:439-451; 1979.

The effect on copper alloys of antimony, Sb and iron, Fe, added singly and combined was determined. Also determined was the influence of aluminum, Al and silicon, Si, added singly. The result of varying the concentration of these four elements was evaluated in terms of the effect on mechanical and other properties.

075

Lagowski, B. "Reacted sand inclusions and their effect on the tensile properties of magnesium alloys"; Am Fdy Soc Trans 87:387-390; 1979.

This paper describes an investigation to determine the effects of reacted sand inclusions on the tensile properties of magnesium alloys.

076

McDonald, R.D. "Automotive under-body corrosion testing"; Proc Nat Assoc Corr Eng Ann Meet; Chicago; March 3-7, 1980.

Corrosion characteristics of potential automotive candidate material have been evaluated and compared with commonly used automotive steels. The first of a series of corrosion tests of these materials is described.

077

Milliken, K.S. and Mitchell, C.M. "Comparison of strain gauge and X-ray diffraction measurements of residual stresses in a weldment of HY130 steel"; Proc 5th Bolton Landing Conf Weldments: Physical Metallurgy and Failure Phenomena, General Electric Co. Technology and Marketing Operation; Schenectady, New York; 1979.

The residual stress distribution over the HAZ and the weld in a circular patch test plate of HY130 steel was determined by a strain gauge method using a rim mounted strain gauge and taping from the plate centre. The connection between the residual stresses and stress corrosion cracking in such plates is demonstrated.

078

Packwood, R.H., Kriz, J. and Patmore, D.J.F. "EPMA-SEM as tools in the investigation of hydro-cracking processes"; Proc 14th Ann Conf Microbeam Anal Soc; San Antonio, Texas; Aug. 12-17, 1979.

Two investigations are described which touch on problems in catalytic and thermal hydro-cracking using the microprobe and SEM coupled with Energy Dispersive X-ray Spectroscopy (EDXS) techniques.

079

Sahoo, M., Edwards, J.O. and Thomson, R. "Influence of corrosion-inhibiting heat treatment on the microstructure and mechanical properties of nickel-aluminum bronze alloy C 95800"; Am Fdy Soc Trans 87:495-502; 1979.

The differences in microstructure and properties of a nickel-aluminum bronze alloy after corrosion-inhibiting heat treatment are interpreted in terms of composition and prior cooling rate.

080

Sahoo, M., Wang, K.C. and Edwards, J.O. "Foundry characteristics of both Nb-modified and Cr-modified high strength 70/30 Cu-Ni alloys"; Am Fdy Soc Trans 53:529-536; 1979.

A summary is presented of studies on foundry and welding characteristics of high-strength 70/30 cupro-nickel casting alloys because of anticipated demand for such materials in future shipboard piping systems.

081

Sahoo, M. and Edwards, J.O. "Gating and risering of medium-size commercial castings of high-strength cupro-nickel (IN 768)"; Am Fdy Soc Trans 87:519; 1979.

Results are given from a study conducted on the foundry characteristics, mechanical properties, and weldability of a chromium-modified 70/30 cupro-nickel alloy.

082

Shmay, R.C. and Buhr, R.K. "Assessment of the technological capabilities of the Canadian foundry industry"; Modern Castings; March 1980.

Abstract given under CANMET Report 79-24 (entry 032) Section 1.

083

Skelly, H.M. "Some mechanical properties of powder-forged iron/alloy mixtures"; Powder Metall 22: 2:41-44; 1979.

This paper describes an investigation to determine the feasibility of producing alloy forgings from a powder prepared by mixing the alloying additions with iron powder. Results show that useful tensile properties can be obtained from a preform forging made from a powder mixture of nominal composition: 0.5% C - 0.6% Mn - balance iron.

084

Thomson, R. and Sahoo, M. "The structure and mechanical properties of continuously cast Ni-Al bronze bar stock"; Am Fdy Soc Trans 87:485-490; 1979.

The properties of continuously cast nickel-aluminum bronze alloy products are examined and data are given on the increases in strength attainable by precipitation hardening heat treatment.

085

Tyson, W.R. "Hydrogen in metals"; Can Metall Q 18:1-11; 1979.

A brief summary is presented of the known effects of hydrogen on metals, especially degradation and embrittlement. Practical problems involving hydrogen are surveyed.

TECHNOLOGY INFORMATION DIVISION

086

Sutterlin, P.G. "Review of 'Geomathematics': Past, present, and prospects"; Int Union Geol Sci; Episodes 1979:2.

A brief review is presented of papers published in "Geomathematics: Past, present, and prospects" of the International Association for Mathematical Geology. Contributors are: J.C. Griffiths, W. Schwarzacher, F.P. Agterberg,

R.A. Rayment, W.C. Krumbein, and Felix Chayes.

087

Weidmark, P.E. "Fifteenth supplement to bibliography of Canadian contributions in the field of rock mechanics" CIM Bull 72:807:145-147; July 1979.

Prepared for the Canadian National Committee on Rock Mechanics.



SECTION 3

ORAL PRESENTATIONS

The following papers were presented at various meetings, conferences, and symposia. As indicated some have been published in the appropriate conference proceedings or as journal articles. They are available only from the journal or proceedings cited, or by direct request to the author.

MINERAL SCIENCES LABORATORIES

088

Ahmed, S.M. "Redox reactions and photoelectrochemical studies on the 11-C surfaces of MoS₂"; ERP/MSL 79-57(OP); presented 156th Meet Electrochem Soc, Los Angeles; Oct. 14-19, 1979.

Extended abstract.

089

Ahmed, S.M. "Surface chemistry of asbestos fibre"; MRP/MSL 79-132(OP); presented Am chem Soc Meet; Houston, Texas; March 24-28.

Wet processing, an alternative method to dry processing, was examined by measuring the electrophoretic mobility and the zero point of charge of chrysotile samples. The effect of different reagents on the settling of chrysotile fibre was also examined. Surface chemistry of asbestos is briefly reviewed.

090

Ahmed, S.M. "Use of semiconductor oxides in photoelectrochemical cells for solar energy conversion: Principles and problems"; ERP/MSL 79-166 (OP); presented Can Ceram Soc Meet; Feb. 27-29, 1980.

A review is presented of attempts to overcome problems encountered in using TiO₂ and certain titanates for solar energy conversion.

091

CANMET Staff "Submission to Province of British Columbia Royal Commission of Enquiry Health and Environmental Protection - Uranium Mining"; ERP/MSL 79-136(OP); Oct. 1979.

Technology for economic processing of uranium ores is described and specific aspects that have an impact on environment and public health are identified: production and control of dust in crushing; product drying and packaging; control of radioactivity levels in the mill; and containment of radionuclides, heavy metals, and process chemicals.

092

Carson, D.W. "CANALPH-3 - A portable alpha spectrometer for radiation dosimetry in mines and homes"; MRP/MSL 80-38(OP); presented at workshop on radon and radon daughters in urban communities associated with uranium mining and processing; Port Hope, Ont.; March 12-14, 1980.

CANALPH-3 is a portable alpha spectrometer for measuring daughter products of radon and thoron to determine the health risk to personnel both underground in a mine environment and in homes. This instrument is described and a discussion on counting procedures for determining the working levels of radon and thoron is presented.

093

Green, D.J. "Solution spray-dried and freeze-dried sodium beta-alumina powders: Preparation and hot pressing"; ERP/MSL 79-42(OPJ); presented 4th Int Conf Mod Ceram Tech, St. Vincent, Italy; May 30, 1979. (Will be published in Conf Proc)

Results on powders produced from solution by spray freezing-freeze drying and spray drying techniques are presented. The two types of powder are compared with respect to their behaviour during calcination and ease of fabrication. Both techniques have been successful in producing high quality ceramic powders.

094

Green, D.J. "Hot pressing of sodium beta alumina"; ERP/MSL 79-151(OP); presented Ann Can Can Ceram Soc; Montreal; Feb. 25-27, 1979.

Sodium beta-alumina powders were prepared by spray-drying and freeze-drying of solutions. After characterizing the dried powders and their calcination products the calcined powders were hot-pressed into dense ceramic discs. A comparison was made of the relative densification rates for the two types. The discs were characterized by microstructural and phase analyses.

095

Haque, K.E. "Hydrochloric acid leaching on Elliot Lake uranium ore"; ERP/MSL 79-59(OP); presented 18th Ann Conf Metall, Sudbury; Aug. 19-23, 1979.

Laboratory-scale studies of hydrochloric acid and chlorine-assisted leaching of a typical Elliot Lake uranium ore are described. Results indicated that irrespective of temperature and retention time chlorine-assisted leaches favoured uranium and thorium extraction and the maximum extractions, U = 98% and Th = 92%, appeared at 75°C with six hours retention.

095a

Joe, E.G. "Capital and operating costs for uranium milling in Canada"; ERP/MSL 78-203(OP); pre-

sented Ann Gen Meet CIM; Montreal; April 24, 1979.

Methods for determining capital and operating costs of a 3000 t/d acid leach uranium mill are presented. Factored systems based on capital cost of major pieces of equipment using the Lang and Chilton factors are described.

096

Laguitton, D. and Wilson, J.M.D. "Matbal II - A Fortran program for balancing mineral processing circuits"; MRP/MSL 79-109(OPJ); presented 18th Ann Conf Metall, Sudbury; Aug. 19-23, 1979. (Will be published in Conf Proc)

A new FORTRAN package has been developed which permits routine and in-depth investigation of steady state flow conditions in a mineral processing circuit. This new prgram is referred to as MATBAL II. This report outlines the method and provides details of the error calculation. An example from published data is used to demonstrate the application of the program.

097

Laguitton, D., Pilgrim, R., Hodouin, D. and Everell, M.D. "Computer simulators, building blocks for the mineral processor"; MRP/MSL 80-6(OPJ); presented Can Min Proc Ann Meet, Ottawa; Jan. 1980. (Will be published in Proc)

This is a case history of applying computer modelling and simulation to improve grinding in an operating concentrator.

098

MacKinnon, D.J. and Brannen, J.M. "Zinc electrowinning from chloride electrolyte"; MRP/MSL 79-83 (OP); presented 109th AIME Ann Meet, Las Vegas, Nevada; Feb. 24-28, 1980.

An electrowinning process is described whereby compact metallic zinc is electrowon directly from purified aqueous zinc chloride electrolyte containing 15 g/L Zn, 0.12 M HCl and 15 mg/L tetrabutylammonium chloride as the smoothing agent.

099

Mathieu, G.I. "Desulphurization and de-ashing of an Eastern coal by high-gradient magnetic separation"; ERP/MSL 79-80(OP); presented 1979 Eng Found Conf Adv Coal Cleaning, Rindge, New Hampshire, U.S.A.; Aug. 5-10, 1979.

Tests were performed on a raw coal from the Prince mine of Cape Breton Development Corporation using the high-gradient magnetic separation (HGMS) process. The sample contained 9.26% ash and 2.56% pyritic sulphur of which up to 57.4% and 65.4%, respectively, were removed by HGMS. Tests are described along with the characteristics of the coal sample and features of the magnetic separator.

100

Mikhail, S.A. "DTA investigations of the chlorination of some sulphide minerals"; MRP/MSL 79-95 (OP); presented CIM Conf Metall; Aug. 1979.

A study is described on chlorination of individual sulphide minerals using differential thermal analysis (DTA). The minerals studied were: galena, sphalerite, pyrite and chalcopyrite.

101

Mirkovich, V.V. "Thermal diffusivity of Ba-mica and Ba-mica/yttria-stabilized zirconia composites"; ERP/MSL 79-145(OPJ); presented 16th Int Therm Conduct Conf; Nov. 7-9, 1979. (Will be published in Conf Proc)

A specimen of solid Ba-mica and a Ba-mica/yttria-stabilized zirconia composite were prepared and their thermal diffusivities determined in the range of 25 to 700°C. Measurements on an oxygen deficient Ba-mica/zirconia composite indicate that oxygen vacancy formation appreciably depresses the thermal transport properties.

102

Pint, P. "Electrochemistry of molten salts"; MRP/MSL 79-163(OP); presented Dept. Chem, Carleton Univ, Ottawa; Nov. 30, 1979.

Various properties of molten salts are described and compared with aqueous electrolytes. The advantages of fused salt systems for electro-refining and electrowinning of metals are discussed and examples from industrial processes are given.

103

Quon, D.H.H and Malhotra, V.M. "Effect of superplasticizers on workability, strength and degree of conversion of high-alumina cement concrete"; MRP/MSL 80-55(OPJ); presented Ann Meet Am Ceram Soc; Chicago; April 27-30. (Will be published in J Am Concr Inst)

Results are provided of an investigation to determine the effect of superplasticizers on the workability, compressive strength and degree of conversion of high-alumina cement concrete.

104

Quon, D.H.H., Wheat, T.A. and Nesbitt, W. "Synthesis, characterization and fabrication of $\text{Na}_{\text{Mx}}\text{Zr}_2\text{Si}_x\text{P}_{3-x}\text{O}_{12}$ powders"; ERP/MSL 80-9(OP); presented Can Ceram Soc; Feb. 24-26, 1980.

A wet chemical technique was used to prepare $\text{Na}_{\text{Mx}}\text{Zr}_2\text{Si}_x\text{P}_{3-x}\text{O}_{12}$. The effects of sintering conditions and atmosphere on density and phase formation in the system were examined.

105

Steger, H.F. and Faye, G.H. "The 'State-of-the-Art' in the analysis of reference materials of the CCRMP"; MRP/MSL 79-106(OP); presented Int Symp Prod and Use Ref Mater, Berlin, West Germany; Nov. 13-16, 1979.

A compilation of methodological information is presented from data available to the Canadian Certified Reference Materials Project, which up to then had performed 90 certifications for 27 constituents in 26 reference ores, concentrates and metallurgical products. This information should serve as a vehicle for comparing the accuracy, absolute and relative, of various analytical methods.

106

Stemerowicz, A.I. and Petruk, W. "Laboratory investigations and image analysis studies on samples from the base metal deposit of Brunswick Mining and Smelting Corp. Ltd."; MRP/MSL 79-2(OPJ);

presented Can Miner Proc Meet; Ottawa; Jan. 23, 1979 and in Proc 76-97.

Flotation techniques are described for recovering zinc from mill tailings and for producing bulk concentrates with high metal recoveries from ores. Results show the recoveries of metals, free sphalerite, slimed sphalerite and unliberated sphalerite.

107

Sutarno, R. "Application of statistical methods for inventory verification"; ERP/MSL 80-28(OP); presented CAC/ISO/TC 69 Meet; April 18, 1980.

A simplified formula for calculating sample size for both attribute and variable inspection for nuclear material inventory is derived from the hypergeometric frequency distribution function. Applications of this method within the field of nuclear material safeguard are given.

108

Wheat, T.A. "Synthesis of beta-aluminas from gibbsite"; ERP/MSL 80-27(OP); presented Elect Basic Sci Div, Can Ceram Soc; Ottawa; Feb. 24-26, 1980.

This report describes a process that exploits adsorption from a liquid phase whereby binary and ternary (MgO - and Li_2O -stabilized) 1:6 sodium beta- and beta"-alumina can be produced in a reactive form.

109

Yoon, R. and Stemerowicz, A.I. "Collectorless flotation of chalcopyrite and sphalerite"; MRP/MSL 79-53(OP); presented Can Miner Proc; Ottawa; Jan. 24, 1979 and in Proc 186-204.

An investigation is described in which the flotation of chalcopyrite and sphalerite from copper and copper-zinc ores was achieved without using thiol-type collectors.

ENERGY RESEARCH LABORATORIES

110

Belinko, K., Kriz, J.F. and Nandi, B.N. "Behaviour of different macerals during liquefaction of a high volatile bituminous coal with zinc and tin catalysts"; presented 6th Can Symp Catal; Ottawa; Aug. 1979.

The catalytic activity of tin and zinc in the hydrogenolysis process is compared with that of other tin compounds in terms of conversion, hydrogen consumption and product distribution.

111

Brown, T.D. "Coal gasification and liquefaction"; ERP/ERL 80-10(OP); presented CIM First Technical Meet on Western Coals; Vancouver, Feb. 14-15, 1980.

A review is presented of current gasification technologies for use in the gasification of Canadian coal. Four coal liquefaction processes are also described.

112

Fung, D.P.C., Graham, R. "The role of catalysis in wood gasification"; ERP/ERL 79-36(OP); presented Am Chem Soc Meet, Wash., D.C., Sept. 10-14, 1979.

A literature survey and laboratory studies on gasification of biomass in the presence of potassium carbonate and calcium oxide catalysts are presented. The catalysts significantly increased hydrogen composition of the product gas and promoted a greater net gas yield at the expense of the solid char product.

113

George, A.E. "Research projects of oil and gas resource and reserve assessment"; ERP/ERL 79-49 (OP); presented NACMMR Sub-Committee Meet for Energy Proc; Sept. 1979.

A summary is presented of the objectives and recent accomplishments of the Resource and

Reserve Assessment group of Energy Research Laboratories, CANMET.

114

Hayden, A.C.S. "Efficiency of wood-fired appliances"; ERP/ERL 78-82(TR)(OP); presented to Can Wood Energy Institute and published in Manual on Installation, Operation and Maintenance of Wood-burning Appliances; 1979.

This paper discusses four techniques used to measure the efficiency of wood-fired appliances and suggests that efficient air-tight wood stoves can be effective in conserving energy.

115

Hayden, A.C.S. "Performance of compressed wood briquettes in wood stoves"; ERP/ERL 79-16(OP); presented 1979 Ann Conf of Can Wood Energy Inst and in Proc.

This paper discusses preliminary test results on the relative performance of a representative dry maple, and compressed wood briquettes in three wood stove types - two airtight and one non-airtight stoves. Results show that the briquettes should not be used in a non-airtight stove.

116

Lee, G.K., Friedrich, F.D., Whaley, H. and Ogle, I.C. "Coal combustion activities of the Canadian Combustion Research Laboratory"; ERP/ERL 80-25(OP); presented 82nd Ann Gen Meet CIM; Toronto, April 20-23, 1980. (Will be published in CIM Bull)

Brief descriptions are given of projects of the Canadian Combustion Research Laboratory (CCRL) of CANMET related to improved utilization of coal in conventional pulverized-fired boilers and kilns, the use of coal-oil mixtures as a substitute fuel in equipment designed for oil firing and efforts to accelerate the application of fluidized-bed combustion systems for low-grade coal.

MINING RESEARCH LABORATORIES

117

Bigu, J. "Statistical planning of radiation surveys"; MRP/MRL 79-106(OP); presented UMITC, Elliot Lake, Ont.; Oct. 1979.

Useful notions and concepts are given for planning radiation surveys. The topic of this report is described in four sections: methodology of radiation measurements; planning of radiation surveys; fundamentals of statistical analysis; and statistical planning of radiation surveys.

118

Bigu, J. "Some elementary concepts of radiation health and safety in underground uranium mines"; MRP/MRL 80-9(OP); presented Workshop on Health and Safety, Sault College of Applied Arts and Technology, Sault Ste. Marie, Ont.; Feb. 26-27, 1980.

This report reviews main radiation sources, discusses biological effects of ionizing radiation and introduces presently accepted radiation indexes for radiation hazard and exposure. A review is made of available techniques for radiation control and monitoring and of various methods of personnel radiation protection including the use of respirators, job rotation, personnel dosimetry and medical surveillance.

119

Chakravorty, R.N. and Woolf, R.L. "Evaluation of systems for early detection of spontaneous combustion in coal mines"; ERP/MRL 79-9(OP); presented 2nd Inst Mine Vent Congr; Reno, Nevada; Nov. 4-8, 1979.

This paper briefly reviews the state-of-the-art knowledge of the methods developed and used for the early detection of spontaneous combustion. CANMET work to date on carbon monoxide monitoring and infrared detection systems is discussed. Field and laboratory studies indicate that both systems can be used successfully.

120

Chiang, C.S.W., Bannerman, W. and Fisekci, M.Y. "Strata control instrumentation at hydraulic operation mining of a thick and steep coal seam in Western Canada"; ERP/MRL 79-81(OPJ); presented 3rd Can Symp Mining, Surveying and Rock Deformation Measurements, Laurentian Univ., Sudbury, Ont.; Oct. 10-12, 1979.

This paper outlines the current status of a joint study by CANMET and Kaiser Resources Ltd. on strata control instrumentation. It deals with the present state of instrumentation required for fast moving faces in an hydraulic mine where a 16-m thick and >30° coal seam is being extracted at Sparwood, B.C. The results at this stage are for a depth of about 300 m.

121

Dainty, E.D. "A review of the 'underground environment' contributions to the 1978/79 CANMET Minerals Program outputs"; MRP/MRL 79-46(OP); presented Joint Panel on Occup and Envir Res for Uran Prod in Canada, Sudbury; June 5, 1979.

This report describes achievements during 1978/79 by CANMET staff contributing to the improvement of the underground environment in Canadian non-coal mines in ventilation network R/D; dust source identification, measurement and control; diesel emission measurement and control; radiation source identification measurement and control; noise vibration evaluation and control.

122

Dainty, E.D. "Progress during 1979 in the underground environment and tailings treatment aspects of the CANMET Minerals Program"; MRP/MRL 79-96 (OP); presented Joint Panel Occup Envir Res Uran Prod Canada, Ottawa; Dec. 5-6, 1979.

Brief descriptions are presented of the work undertaken by CANMET scientists in the underground environment and tailings treatment aspect of the Minerals Program and indicate progress during 1979 as of November 30, 1979.

123

Dainty, E.D., Lawson, A. and Mogan, J.P. "Impact on underground ventilation of the reduction of diesel emissions toxicity by water-in-oil fuel emulsification"; MRP/MRL 80-11(OP); presented CIM Ann Gen Meet; Toronto; April 20-24, 1980.

The reduction in toxicity of emissions from two diesel engines by the emulsification of water in fuel oil was investigated to determine the applicability of such systems for underground use.

124

DeKorompay, V. "Proposed procedure for using a 'Hydraulic Pot' for measuring the effect of the revegetation on the hydraulic and radiation conditions of uranium tailings ponds"; MRP/MRL 79-65 (OPJ); presented Can Soc Civil Eng Conf; Montreal, Que.; June 7-8, 1979. (Will be published in Minerals and Environ J; London, U.K.)

A procedure is described for using an "Hydraulic Pot" developed to measure the effect of revegetation on the hydraulic and radiation properties of uranium mill tailings stored in surface ponds. This Hydraulic Pot is basically the combination of a seeding pot, a multifunctional hydraulic tester and an open radon collector hood and permits the measurement of the physical properties of the tailings during growth of the vegetation planted in the pot.

125

Gangal, M. "Standard procedures for the use of barometers, pressure gauges and the measurement of friction factors"; MRP/MRL 79-64(OP); presented Subcommittee on Ventilation, Elliot Lake/Sudbury Ventilation Group Meeting held at Rio Algom Mines Ltd., Elliot Lake, Ont.; Jan. 24, 1979.

A brief description of aneroid barometers and pressure gauges is given followed by standard procedures for their use. Also, a method for calculating the friction factor of airways is discussed.

126

Knight, G. "Personal dust sampling for asbestos: A position paper"; MRP/MRL 79-88(OP); presented CAN/EEC Experts Asbestos Sub-Group; Montreal; Feb. 21, 1980.

Various factors affecting dust sampling procedures in asbestos mills are given. It is suggested that respirable size selection for personal sampling should be developed as it gives a better and more consistent estimate of exposure than current sampling techniques.

127

Knight, G. "Novel methods for measuring asbestos: A position paper"; MRP/MRL 79-89(OP); presented CAN/EEC Experts Asbestos Sub-Group; Montreal; Feb. 21, 1980.

A number of possibilities are outlined for improving existing standard techniques for measuring airborne asbestos fibre in workplaces. These depend on aligning the fibre in magnetic or electric fields and include image analysis, diffraction optical methods, light-scattering techniques, X-ray diffraction, and infrared techniques.

128

Knight, G., Kirk, B., Sutarno, R. and Stefanich, W. "Personal dust sampling in mines: Statistical analysis"; MRP/MRL 79-14(OPJ); presented Int Vent Congr; Reno, Nevada; Nov. 1979. (Will be published in Conf Proc.)

It is shown that the dust exposure of all underground workers varies greatly from day to day even with each man doing the same job in the same working place. Variability followed a logarithmic normal distribution with a geometric standard deviation of about 1.6 for total respirable dust, respirable combustible dust, and respirable quartz dust. Variability was homogeneous for all men and most jobs. The difference between men doing the same job was not significant. It is suggested that dust sampling determine the average for each

job and use this as the best estimate of individual exposure.

129

Mogan, J.P. and Dainty, E.D. "Assessment of diesel exhaust treatment options by a new diesel ventilation criterion"; MRP/MRL 79-13(OP); presented 2nd Int Mine Vent Congr; Reno, Nevada; Nov. 4-8, 1979.

An additive health effects index "V" of major noxious constituents in diesel exhaust based on physiological response to a mixture of pollutants was developed by the research contractor. Because more of the interacting exhaust constituents are taken into account, the index represents a significant and workable improvement over existing diesel exhaust dilution criteria.

130

Mogan, J.P., Ferguson, S., Sarin, N. and Stewart, D.B. "Factors affecting explosion pressures in flameproof diesel exhaust systems"; ERP/MRL 79-36 (IR&OP); presented XVIII Int Safety Mines Res Conf, Yugoslavia; Oct. 1979 and in Proc.

Work was done at the Canadian Explosive Atmospheres Laboratory of CANMET to reduce the internal explosion pressure of flameproof diesel exhaust systems in effort to make exhaust treatment systems safer and more economical. Test results and design guidelines are given from a study made of an adjustable mock-up water scrubbing unit. Results show that minimum pressure design requires a modest series of prototype explosion tests.

131

Savich, M. "Development of a noise monitor hat"; MRP/MRL 79-40(OP); presented 18th Int Conf Sci Res Work Safety, Yugoslavia; Oct. 1979.

Initial laboratory and mine tests of the Noise Monitor Hat ability are presented. Its accuracy of measuring noise exposure was better than standard requirements.

PHYSICAL METALLURGY RESEARCH LABORATORIES

132

Buhr, R.K. "Foundry research at CANMET"; MRP/PMRL 79-67(OPJ); presented Am Fdy Soc Conf; Toronto; Sept. 28, 1979.

A brief outline is presented of several of PMRL's current foundry-related research projects: foundry technological capability survey; a survey of the melting efficiencies of cupolas; a technique for applying an abrasion-resistant coating directly to castings; the inter-critical heat treatment of cast steels.

133

McGrath, J.T., Godden, M.J., Gordine, J. and Boyd, J.D. "Fracture resistance of pipeline weldments"; ERP/MPRL/PMRL 79-48(OPJ); Can Metall Q 19:1; 1980.

The fracture properties of both seams and girth weldments in three line-pipe steels are pre-

sented. Comparisons are made of the different steels and welding consumables investigated and results are compared with existing line-pipe specifications.

134

Sahoo, M. and Edwards, J.D. "Gating and risering of medium-size commercial castings of high-strength cupro-nickel (IN 768)"; presented Am Fdy Soc Cast Congr; Birmingham, Alabama; April 30-May 4, 1979.

Of the various factors affecting the soundness of any casting, the gating and risering systems play a most important role. This report deals with the changes in risering as being the main features of the gating system for production-type IN 768 alloy castings.

135

Tyson, W.R. and Trudeau, L.P. "Fracture mechanics concepts" presented CIM Conf of Metall; Sudbury, Ont.; Aug. 1979.

A brief survey is presented of the more important characteristics of the fracture mechanics concepts. Emphasis is placed on describing the state at the tips of cracks in stressed bodies.

136

Vosikovsky, O. "Effects of mechanical and environmental variables on fatigue crack growth rates in steels - A summary of work at CANMET"; presented 18th Conf Metall; Sudbury, Ont.; Aug. 19-23, 1979.

The effects of stress ratio and frequency are examined in air and in liquid environments (represented by 3.5% NaCl water solution, distilled water and sour crude oil) on X65 and X70 line-pipe steels, and on HY130 marine steel.

TECHNOLOGY INFORMATION DIVISION

137

Taylor, G. "Energy research and development at the Canada Centre for Mineral and Energy Technology (CANMET)"; ERP/TID 79-11(OPJ); presented 14th Intersoc Energy Conver Eng Conf; Boston, Mass., Aug. 5-10, 1979.

This paper outlines CANMET's energy research program. Selected highlights are described in coal mining, preparation and conversion; coke-making; combustion technology; oil sands; renewable and nuclear energy; energy storage and transportation; and technical information.

138

Taylor, G. "Energy technology information trends in Canada"; ERP/TID 79-19(OPJ); presented 29th Can Chem Eng Conf, Sarnia, Ont., Sept. 30-Oct. 3, 1979 and in Proc.

Current practices and future trends in data base development and information retrievals are outlined and principal Canadian energy documentation efforts and technical advisory services are described.

SECTION 4

DIVISIONAL AND DECLASSIFIED REPORTS

The reports listed below are available for purchase in microfiche or paper copy from Micromedia Limited, Box 502, Station S, Toronto, Canada, M5M 4L8.

MINERAL SCIENCES LABORATORIES

- 139
MRP/MSL 78-34(TR). Prud'homme, P. "Investigation of new selective ion exchange resins for copper and nickel"
- 140
MRP/MSL 78-223(IR). McNamara, V.M. "Acidification volatilization reneutralization treatment process for decontamination of Canadian gold mill effluents"
- 141
MRP/MSL 78-230(IR). Ripley, L.G. "Extraction of alumina from fly ash and furnace deposits from Hat Creek coal by the modified lime-sinter process"
- 142
MRP/MSL 78-231(IR). Ripley, L.G. "Extraction of alumina from fluidized bed ash from Hat Creek coaly waste by the modified lime-sinter process"
- 143
MRP/MSL 79-23(IR). Jongejan, A. "Compost production from municipal wastes of Elliot Lake"
- 144
MRP/MSL 79-24(IR). Jongejan, A. and Wilkins, A.L. "Compost quality in connection with the effects of microbial concentrates on the degradation of wood waste"
- 145
MRP/MSL 79-31(IR). Klymowsky, I.B. and Wilson, J.M. "A survey of research demands in iron ore"
- 146
MRP/MSL 79-32(TR). Laflamme, J.H.G., Beaulne, J.M. and Bourgoin, Y. "Current polishing procedure for ore minerals, mill products, and synthetic materials in the Mineralogy Section, Physical Sciences Laboratories, CANMET"
- 147
MRP/MSL 79-34(IR). Jongejan, A. "Methods used for the identification of metabolites from cellulose and wood degrading organisms"
- 148
MRP/MSL 79-35(IR). Ripley, L.G. "Analyses of the leach residues from the modified lime-sinter process and the possible utilization of the residues in the cement industry"
- 149
MRP/MSL 79-38(TR). MacKinnon, D.J., Brannen, J.M. and Kilpatrick, M.W. "The effect of glue and chloride ion on copper electrowinning"
- 150
MRP/MSL 79-52(IR). Bell, K.E. "Canadian clay resources for alumina: Summary report"
- 151
MRP/MSL 79-55(TR). MacKinnon, D.J., Kilpatrick, M.W. and Brannen, J.M. "Evaluation of organic additives for use in copper electrowinning"
- 152
ERP/MSL 79-58(IR). Pritzker, M.D., "Beneficiation of secondary heavy-media cyclone middlings from Fording Coal Limited"
- 153
ERP/MSL 79-60(IR). Dean, R.S. "Mineralogical analysis of the Herrin No. 6 coal, Illinois, U.S.A."
- 154
MRP/MSL 79-61(IR). Berry, E.E. "Acidic northern waters project - Progress report No. 2"
- 155
MRP/MSL 79-62(IR). Ripley, L.G. "Extraction and recovery of alumina from fly ash by hydrochloric acid-hydrofluoric acid leaching"
- 156
MRP/MSL 79-64(IR). Wilson, H.S. "Investigation into sintering coal-mine shales for lightweight aggregate Part I"
- 157
MRP/MSL 79-68(TR). Gilmore, A.J. "The removal of metals from chloride raffinates by iron exchange - Interim report No. 5"
- 158
MRP/MSL 79-69(TR). MacKinnon, D.J. "Zinc dust cementation of cobalt from chloride solutions"
- 159
MRP/MSL 79-71(TR). MacKinnon, D.J. and Brannen,

- J.M. "Copper electrowinning using small pilot-scale electrolysis cells"
- 160 MRP/MSL 79-74(TR). Rolia, E. and Barbeau, F. "Thiosalt generation during the production of bulk concentrate from Brunswick Mining and Smelting Corporation ore"
- 161 MRP/MSL 79-77(IR). Mikhail, S.A. and Webster, A.H. "Chlorination of sulphide minerals III. Pyrite and chalcopyrite"
- 162 MRP/MSL 79-79(IR). Laguitton, D. "Development of a computer simulator to investigate the grinding of a complex fine-grained sulphide ore"
- 163 MRP/MSL 79-84(IR). Leung, J. "The feasibility of calibrating an X-ray fluorescence on-stream analyzer with solid standards"
- 164 MRP/MSL 79-85(TR). Rolia, E. and Barbeau, F. "Oxidation of thiosalts by: SO_2 plus air, charcoal plus air, and chlorine"
- 165 MRP/MSL 79-89(TR). Jongejan, A. "Progress report on the degradation of wood waste in connection with the composting process"
- 166 MRP/MSL 79-92(IR). Mirkovich, V.V. "Thermal conductivity of drill core specimens from the Darlington site"
- 167 MRP/MSL 79-93(IR). Sutarno, R. and Bowman, W.S. "Personal dust sampling in mines - Statistical analysis of analytical results"
- 168 MRP/MSL 79-97(IR). Hitchen, A. and MacPherson, D.R. "The determination of Fe^{3+} , Fe^{2+} , Cu^{2+} , Cu^{1+} in concentrated salt solutions related to the hydrometallurgical lead process"
- 169 MRP/MSL 79-99(IR). Winer, A.A., Wang, S.B. and Sirianni, G.V. "Commissioning of a special electric smelting furnace for production of mineral thermal insulation"
- 170 MRP/MSL 79-101(TR). Ripley, L.G. "Extraction of alumina from Hat Creek coaly waste by the modified lime-sinter process"
- 171 MRP/MSL 79-104(TR). Bartels, K. and Copeland, C. "A Cary Model 118C spectrophotometer/microprocessor data acquisition interface: (III) A computer program for calculating from UV-visible spectral data, the wavelength positions and ordinate values of spectral maxima and minima"
- 172 MRP/MSL 79-107(IR). Parsons, H.W., Saleh, V., Kearns, J.B., Ritcey, G.M. and Lucas, B.H. "Low temperature chlorination of Zn/Pb/Cu sulphide ores continuous testing Progress Report No. 1"
- 173 MRP/MSL 79-108(TR). Carson, D.W. "CANALPH-3 - A portable three-channel alpha spectrometer for measuring the daughter products of radon and thoron"
- 174 MRP/MSL 79-112(IR). Mirkovich, V.V. "Thermal diffusivity and thermal expansion of drill core specimens from the Darlington site"
- 175 MRP/MSL 79-114(IR). Wilson, J. and Klymowsky, I.B. "Material balances of the Brunswick Mining and Smelting flotation circuit and the Health-Steele grinding circuit using the Matbal Program"
- 176 MRP/MSL 79-116(IR). Raicevic, D., Raicevic, M. and McCarthy, D.R. "Preconcentration of low-grade uranium ores with environmentally acceptable tailings"
- 177 ERP/MSL 79-117(TR). Laflamme, J.H.G. "Operation of a low-temperature plasma asher"
- 178 MRP/MSL 79-119(IR). Stemerowicz, A.I. and Leigh, G.W. "Production of a zinc concentrate from Brunswick Mining and Smelting Corporation mill tailings"
- 179 MRP/MSL 79-120(IR). Laguitton, D. "Household Fortran computer programs for the Ore Processing Laboratory: I - METCAL, metallurgical calculations from laboratory and pilot plant investigation results"
- 180 MRP/MSL 79-121(TR). Kelly, F.J. "Radium removal processes capital and operating cost estimates"
- 181 MRP/MSL 79-125(IR). Jongejan, A. "Progress report on the degradation of garbage in connection with the composting process"
- 182 MRP/MSL 79-126(TR). Bartels, K. "An evaluation of the destruction of thiosalts by electro-oxidation"
- 183 ERP/MSL 79-134(IR). Petruk, W. "Mineralogical and image analysis investigation of iron ore samples from the Scully Mine, Southwestern Labrador"
- 184 ERP/MSL 79-135(TR). Saiddington, J.C. "Abrasive wear of selected line-pipe and abrasive resistant

steels in quartz slurries"

185

MRP/MSL 79-137(IR). Ripley, L.G. "Extraction of alumina from five Ontario anorthosites by the modified lime-sinter process"

186

MRP/MSL 79-138(IR). Dean, R.S. "Evaluation of the Hat Creek, British Columbia coal deposits as potential sources of non-bauxitic alumina: A preliminary mineralogical investigation"

187

MRP/MSL 79-139(TR). Kelly, F.J. and Wong, W.S. "Material and heat balances for the Sherrit Gordon pressure leach process for treating complex zinc-lead-copper ores of New Brunswick"

188

MRP/MSL 79-144(IR). Hamer, C. "Alumina from fluidized-bed combustion ash of Hat Creek, B.C. coaly waste - Part II. Alumina recovery and purification by an HCl process"

189

MRP/MSL 79-146(IR). Ripley, L.G. "Extraction of alumina from French River (Ontario) nepheline syenite by the lime-sinter process"

190

ERP/MSL 79-148(LS). Gilmore, A.J. "Rejuvenation processes applied to poisoned anion exchangers in uranium processing - A review"

191

MRP/MSL 79-154(TR). Gilmore, A.J. "The removal of radioactive radium (Ra^{226}) from chloride leach liquors by ion exchange - Progress report"

192

MRP/MSL 79-156(IR). Hughson, M.R. "An image analysis study of exsolution chalcopyrite in sphalerite from the south sulphide orebody of the Caribou Deposit"

193

MRP/MSL 79-159(IR). Mikhail, S.A. and Webster, A.H. "The effect of Fe_2O_3 additions on the chlorination of some sulphide minerals"

194

MRP/MSL 79-160(TR). Pilgrim, R.F. "Preliminary users' guide for 'ANS' - A computer program to implement a computer print-out system for sample handling and reporting for the chemical laboratory"

195

MRP/MSL 79-167(IR). Jongejan, A. "Microbial cellulose-degradation in connection with the

abatement of water acidity"

196

MRP/MSL 79-169(IR). Dean, R.S. "Cursory mineralogical examination of ceramic clays and shales of the Prairie Provinces"

197

MRP/MSL 79-174(TR). Bell K.E. "Effect of heating rate on the thermal dilatometry of rocks"

198

MRP/MSL 80-4(LT). Chen, T.T. "An English translation of the Chinese paper: Mineralogy and occurrence of the platinum-group elements in a chromium deposit in Northwestern China"

199

MRP/MSL 80-5(TR). Hoey, G.R. and Bednar, J.S. "Corrosion of metals and alloys in ferric-ferrous chloride leach solutions at 22° to 106°C"

200

MRP/MSL 80-7(TR). Skeaff, J.M. and Campbell, H.W. "Physical, chemical and dewatering characteristics of Ba/Ra_{SO₄} sludges from uranium milling"

201

MRP/MSL 80-11(TR). Pinard, R.G. "Mineralogical and image analysis investigations of a bulk concentrate prepared in the Ore Processing Laboratory from the ore of Brunswick Mining and Smelting Corporation Limited, Bathurst, New Brunswick"

202

MRP/MSL 80-13(IR). Lucas, B.H. "Desilication of sodium aluminate solutions"

203

ERP/MSL 80-14(TR). McCready, H.H. and Smith, H.W. "Proceedings of the Ra^{226} Radium workshop October 17, 1977"

204

ERP/MSL 80-15(TR). Wheat, T.A. "Recent developments in ceramics"

205

MRP/MSL 80-18(TR). MacKinnon, D.J. and Brannen, J.M. "Copper electrowinning from sulphate electrolytes produced by solvent extraction"

206

MRP/MSL 80-23(TR). Rolia, E. "A study of the comparative rates of thiosalt generation from cleaned sulphide mineral concentrates and EMS ore during agitation in a flotation cell"

207

MRP/MSL 80-47(TR). Dutrizac, J.E. "Synthesis of $2Sb_2O_3 \cdot V_2O_3$ "

ENERGY RESEARCH LABORATORIES

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ERP/ERL 79-17(TR). Andersen, N.E. "A critical review of size distributions of flocculated particles: Application of electronic particle counters"

209

ERP/ERL 79-18(TR). Mikhail, M. "Size degradation -1 of bituminous coal"

210

ERP/ERL 79-19(TR). Andersen, N., Hamza, H.A. and Hashmi, K. "An evaluation of the applicability of the Coulter counter for the characterization of bituminous dispersions in aqueous phases"

211

ERP/ERL 79-24(TR). Whalley, B.J.P. and Lau, I.T. "Instrumental anticipation of defluidization of heated beds of caking coal (Part II)"

212

ERP/ERL 79-29(TR). Braaten, R.W. and Brown, T.D. "Evaluation of a modified Carswell 300-C warm air furnace"

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ERP/ERL 79-33(TR). Tibbetts, T.E. "Assessment of rank and quality of Canadian coals"

214

ERP/ERL 79-37(TR). Nandi, B.N. "Petrographic studies of lignite and its residual product from liquefaction process"

215

ERP/ERL 79-38(TR). Janke, L., Montgomery, W.J., Hickman, C.M. and Dureau, R. "Determination of major and minor elements in fused coal-ash samples with energy-dispersive X-ray spectrometry using a fundamental parameter approach"

216

ERP/ERL 79-40(TR). Combustion Sub-committee of the Ferrous Energy Research Assoc. "The effect

of atomization variables on heat transfer from liquid fuel flames"

217

ERP/ERL 79-41(TR). Montgomery, W.J. "Assessment of Mont Joli coal"

218

ERP/ERL 79-43(TR). Janke, L.J. and Montgomery, W.J. "A comparison of three analytical procedures for the determination of moisture in the analytical sample of brown coals and lignites"

219

ERP/ERL 79-47(TR). Marwaha, V.R., Cameron, D.D. and Botham, J.C. "Engineering modifications to CANMET test ovens and related pilot plant facilities: Part I: Repair of Ottawa test ovens"

220

ERP/ERL 79-52(TR). Brown, T.D. "Canadian research, development and demonstration activities in coal gasification, coal liquefaction and coal oil mixture combustion"

221

ERP/ERL 79-62(TR). Chmielewiec, J., Beshai, J. and George, A.E. "Synthetic studies of high performance liquid chromatographic bonded phase sorbents for preparative scale fossil fuel separation"

222

ERP/ERL 80-2(TR). Montgomery, W.J. "A test to determine the physical stability of a compressed wood fire-log as it relates to the absorption of atmospheric moisture"

223

ERP/ERL 80-28(TR). Price, J.T., Gransden, J. and Brown, T.D. "Chinese-Canadian metallurgical coal blends: Prediction of coke characteristics"

224

ERP/ERL 80-33(TR). Galbraith, L.E. "An XPS examination of oxidized coals submitted by Dr. B.N. Nandi"

MINING RESEARCH LABORATORIES

- 225
ERP/MRL 79-24(TR). Sabourin, R. "Definitions des reserves"
- 226
MRP/MRL 79-25(TR). de Korompay, V. "Determination of the relative discharge rate from a uranium mine tailings pond by water level measurements"
- 227
MRP/MRL 79-26(TR). Rowlandson, M. "Mass collection efficiency tests on cyclones"
- 228
ERP/MRL 79-30(R). Grant, F. "Support of mine strata with roof bolts"
- 229
ERP/MRL 79-32(TR). Bossert, J.A. "Report of the meeting of International Electrotechnical Commission 31 in Budapest, Hungary"
- 230
ERP/MRL 79-35(TR). Lobay, G. "A proposed short test program for combustible gas detection instrument to supplement CSA standard C22.2 No. 152-1976"
- 231
ERP/MRL 79-39(TR). Srajer, V. "Air injection test in oil sands"
- 232
MRP/MRL 79-42(TR). Bigu, J. "A technical evaluation of the EDA radon gas continuous monitoring system"
- 233
ERP/MRL 79-43(TR). Grant, F. "Sukunka main roof bolt tests, March 5,6,7,/79"
- 234
ERP/MRL 79-45(TR). Zahary, G. "Joint panel - Uranium production"
- 235
MRP/MRL 79-51(TR). Hedley, D.G.F. "Minutes of the 24th Annual Meeting of the Canadian National Committee on Rock Mechanics"
- 236
ERP/MRL 79-52(TR). Romaniuk, A.S. "Saskatchewan coal quality factors"
- 237
ERP/MRL 79-53(TR). Sabourin, R. "Standard procedure for the documentation of computer programs"
- 238
MRP/MRL 79-54(TR). Annor, A. "Proposed survey and computer programs"
- 239
ERP/MRL 79-56(TR). Sarin, N. "Investigation of the modified exhaust system on Rhino diesel pow-
- ered transporter"
- 240
MRP/MRL 79-57(TR). Muir, B. Ambient temperature calibration of 24 IRAD stressmeters"
- 241
MRP/MRL 79-58(TR). Carr, P., et al. "Progress report on in situ heater experiment"
- 242
ERP/MRP/MRL 79-59(TR). Scott, Joan P. "MRL project control computer program"
- 243
MRP/MRL 79-60(TR). Annor, A., Larocque, G. and Chernis, P. "Uniaxial compression tests, Brazilian tensile tests and dilatational velocity measurements on rock specimens from Pinawa and Chalk River"
- 244
MRP/MRL 79-63(TR). Bigu, J. and Carson, D.W. "A preliminary report on the combined radon daughter/dust sampler (TLD/CAMPED) dosimeter"
- 245
MRP/MRL 79-66(TR). Miles, P. and Herget, G. "Ground stress determinations at Thompson and Birchtree Mines, Thompson, Manitoba"
- 246
ERP/MRL 79-67(TR). Das, B.M. "Development of preliminary underground coal mining methods matrix"
- 247
ERP/MRL 79-68(TR). Dainty, E.D. and Mogan, J.P. "Preliminary draft (Iteration No. 2): The certification of flameproof diesel-powered, rubber-tired, trackless, self-propelled vehicles for use in underground coal mines in Canada"
- 248
MRP/MRL 79-69(TR). Yu, Y.S. "Some clarification for pillar strength formulae developed for the Elliot Lake mines"
- 249
MRP/MRL 79-71(TR). Hedley, D.G.F., Hambley, D.F. and Morgan, G. "Regional stability in the Elliot Lake mines Part 1: The Denison-Quirke Boundary"
- 250
MRP/MRL 79-72(TR). Feng, K.K. and Hanasaki, K. "A numerical study of the behaviour of liquid and slurry explosives under projectile impact"
- 251
MRP/MRL 79-73(TR). Carr, P. "Laboratory test of in situ heater segment"
- 252
MRP/MRL 79-74(TR). Darling, J.A. "Smokeless powder burning trial at Hinchinbrook, May 1979"

- 253
ERP/MRL 79-75(TR). Geller, L.B. "Report on IEA/MTCH hydrotransport meeting, Pittsburgh, August 6-9, 1979"
- 254
MRP/MRL 79-76(TR). Herget, G. and Miles, P. "Shear strength of geological discontinuities with material bridges"
- 255
MRP/MRL 79-78(TR). Lim, T. "Dilution gouging method using chloride and iodide electrode for tailing effluent discharge measurement"
- 256
MRP/MRL 79-79(TR). Kirk, B. "The feasibility of measuring chrysotile fibres by X-ray diffraction"
- 257
MRP/MRL 79-80(TR). Carr, P., Annor, A. and Kapeller, F. "Calibration report for the digitized inclinometer used in the in situ heater project"
- 258
MRP/MRL 79-82(TR). Toews, N., Wong, A.S., Rebstock, J. and Yu, Y.S. "PRSPLT documentation"
- 259
MRP/MRL 79-83(TR). Sangster, R. "The analysis of Radium-226 by alpha spectrometry"
- 260
ERP/MRL 79-85(TR). Dainty, D. "A review of the 'Environment and Safety' contributions to the 1978/79 Energy Program outputs of the CANMET Mining Sub-Sub/Activity"
- 261
MRP/MRL 79-86(TR). Picche, R. "Analysis of oxi-symmetric pillar structure"
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MRP/MRL 79-87(TR). Knight, G. "A comparison between two mine dust sampling systems"
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ERP/MRL 79-92(TR). Ralph, M.S. "Proposed quality control programme for EMR certification service"
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MRP/MRL 79-93(TR). Morgan, G., Hedley, D.G.F. and Hambley, D.F. "Regional stability in the Elliot Lake mines Part 2: The Denison-Panel Boundary"
- 265
MRP/MRL 79-94(TR). Hedley, D.G.F., Morgan, G. and Hambley, D.F. "Regional stability in the Elliot Lake Mines Part 3: Pillar recovery at Denison Mine"
- 266
ERP/MRL 79-95(TR). Bossert, J.A. "Report of the meeting of Technical Committee No. 31 of the International Electrotechnical Commission held in Ottawa, Canada, Sept. 14 to 21, 1979"
- 267
ERP/MRL 79-97(TR). Bossert, J.A. and Ralph, M.S. "Modification to the No. 1 control console for automated explosion testing of electrical apparatus"
- 268
ERP/MRL 79-100(TR). Srajer, V. "Potential of bucketwheel technology for Mining Plains Coal"
- 269
ERP/MRL 79-101(TR). Fisecki, M.Y., Chiang, C. and Bannerman, W. "Progress Report of the strata control Project 77-78 at Kaiser Hydraulic Mines, Sparwood, B.C."
- 270
MRP/MRL 79-102(TR). Yu, Y.S. and Toews, N.A. "Three-dimensional stress distribution in a pillar for a typical room-and-pillar system of mining"
- 271
MRP/MRL 79-103(TR). Yu, Y.S. and Toews, N. "MINSIM - A mining simulator for determining the elastic response of strata, surrounding tabular mining excavations (User's Guide)"
- 272
ERP/MRL 79-104(TR). Feng, K.K. and Augsten, R. "Minimum ignition temperature of coal dust closed from Canadian coal mines"
- 273
MRP/MRL 80-1(TR). Knight, G. "Program for dust in coal mines"
- 274
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"Bitumen content analysis for Mining Research Laboratories, EMR"; Jha, Kamal N. and Strausz, Otto P.; University of Alberta
Contract OST78-00047 - 3 p

426

"Computer model for stress-strain analysis of oil-sand"; Thurber Consultants Ltd.
Contract OSQ78-00139 - 227 p

427

"Development of a bench scale fluidized bed coal gasifier and gas burner system"; Plett, E.G., Hosny, N.M. and Khalil, M.B.
Contract OSU77-00413 - 79 p

428

"Development of an industrial burner for using gases of low calorific value"; Canadian Gas Research Institute
Contract OSQ78-00003 - 82 p

429

"Drying and briquetting of Estevan and Onakawana lignite"; Manalta Coal Limited
Contract OSQ76-00161 - 58 p

430

"Emission control of a Detroit diesel, 8V 71N engine derated for underground use"; Ontario Research Foundation
Contracts OSQ-77-00183, ISQ77-00123 - 187 p

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"Feasibility study for the inorganic no-bake closed sand moulding system for steel casting"; Valvoline Oil and Chemicals Ltd. (Ashland chemical Division)
Contract OSQ78-00171 - 101 p

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"Geophysical techniques applicable to Canadian

coal/To adopt and develop"; D. Masszi Consulting Services Ltd.

Contract OSQ78-00121 - 233 p

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"Investigations of waterways formation limestones"; Golder Associates
Contract OSQ78-00106 - 305 p

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"Kinetic studies relating to gasification of coal characterization and reactivity of thin carbon films"; Chen, C.-J. and Back, M.H., University of Ottawa
Contract OSU77-00412 - 41 p

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Contract OSQ78-00026 - 26 p

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"Molybdenum and niobium on the hot working of line-pipe steels/effect of"; Jonas, J.J., McGill University
Contract OSU77-00419 - 11 p

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"Solubility of cuprous chloride in chloride media"; Itzkovitch, I.J., Ontario Research Foundation
Contract OSQ78-00221 - 100 p

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"Thermal dewatering of lignite"; Saskatchewan Power Research and Development Centre
Contract OSQ78-00017 - 129 p

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"Technical and economic assessment of horizontal continuous casting of steel"; Ferrco Eng. Ltd.
Contract OSQ78-00197 - 118 p

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Georges de la Harpe, *Leçons de grammaire grecque*, Paris, 1880.

¹ See also the discussion of the relationship between the two in the section on "Theoretical Implications."

1946年1月1日，蘇聯在東北的黑龍江省呼蘭河口，對中國人民軍隊發起突然襲擊，造成我軍傷亡數百人。

10. The following table gives the number of hours worked by each of the 1000 workers.

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1. The following table gives the number of hours worked by each of the 100 workers in the sample.

19. *Leucosia* *leucostoma* *leucostoma* *leucostoma* *leucostoma* *leucostoma* *leucostoma*

10. The following table gives the number of hours worked by each of the 100 workers.

10. The following table gives the number of hours worked by each of the 100 workers in the firm.

the first time in the history of the world, the people of the United States have been compelled to make a choice between two political parties.

10. The following table gives the number of hours worked by each of the 1000 workers.

10. The following table gives the number of hours worked by each of the 1000 workers.

19. *Leucosia* *leucostoma* *leucostoma* *leucostoma* *leucostoma*

¹ See also the discussion of the relationship between the two concepts in the section on "The Concept of Social Capital."

SECTION 6

RESEARCH AGREEMENT PROGRAM REPORTS

The reports listed below are NOT available from CANMET. Copies should be requested from the authors at their respective institutional addresses.

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Kouame, D., Hodouin, D. and Everell, M.D. Rapport d'avancement, Annexe I: "Etude du comportement de deux arrangements de l'unité de deschlammage expérimental de Niobec Services TMG, Inc.", Québec, Université Laval, Département de Mines et Métallurgie, août 1979
Agreement 65-2-78, 209-2-79 - 66 p

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Amany, G., Rapport d'avancement, Annexe II: "Etude et simulation de broyeurs à barres industriels", Septembre 1979
Agreement 65-2-78, 209-2-79 - 168 p

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Groupe de recherche en automatisation appliquée à l'industrie minérale, Projet: "Dimensionnement de circuits industriels de comminution", octobre 1979
Agreement 65-2-78, 209-2-79 - 15 p

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Bland, C.J. and Gonzales, D.E. "A study to investigate the use of manganese impregnated fibre for the removal of dissolved radionuclides from mine discharges" Calgary, University of Calgary, Physics Department, May 1979
Agreement 25-2-78 - 23 p

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Postlethwaite, J. and Santo, W. "Progress report No. 2, Inhibition of erosion-corrosion in slurry pipelines", Saskatoon, University of Saskatchewan, Department of Chemistry and Chemical Engineering, November 1977
Agreement 44-2-77, 153-2-78 - 7 p

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Kai Kwok Cheng "Digital simulation of a flotation circuit", Vancouver, University of British Columbia, June 1979
Agreement 236-2-78 - 57 p

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प्राचीन विद्यालयों की संरक्षण और विकास

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