# Mines Branch Information Circular IC 283 BIBLIOGRAPHY OF HIGH-TEMPERATURE CONDENSED STATES RESEARCH PUBLISHED IN CANADA, JANUARY - MARCH, 1972

by

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## SYNOPSIS

This report contains bibliographic information concerning research work on high-temperature condensed states published in Canadian journals from January 1 to March 31, 1972.

\*Head, Physical Chemistry Group, Mineral Sciences Division, Mines Branch, Department of Energy, Mines and Resources, Ottawa, Canada. Direction des mines, Circulaire d'information IC 283 BIBLIOGRAPHIE DES RECHERCHES ÉFFECTUÉES DANS LE DOMAINE DES ÉTATS CONDENSÉS AUX TEMPÉRATURES ÉLEVÉES, AU CANADA, DE JANVIER À MARS, 1972

par

Norman F.H. Bright\*

RÉSUMÉ

Le présent rapport contient des renseignements bibliographiques sur les recherches éffectuées sur les états condensés aux températures élevées, publiées dans les revues scientifiques canadiennes au cours de la période de janvier l à mars 31, 1972.

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#### INTRODUCTION

This report is a further contribution to the series of bibliographic bulletins of information on high-temperature condensed states research that have been published as Mines Branch Information Circulars since March 1960 on behalf of the Commission on High Temperatures and Refractory Materials of the International Union of Pure and Applied Chemistry. The present document covers the three-month period from January 1 to March 31, 1972, and gives details of work published in Canadian scientific and technical journals during that period.

Anyone not now receiving these reports who wishes to do so, or anyone who currently receives these bibliographies but to whom they are no longer of interest, is requested to advise the compiler accordingly so that the appropriate changes may be made in the relevant mailing lists.

The compiler would very much appreciate being advised of any work published in Canadian journals, and lying within the scope of these bibliographies, that has escaped his notice in order that such work may be mentioned in a subsequent issue of this series of Information Circulars.

Any further information concerning these bibliographies or any of the other relevant IUPAC activities can be obtained from the compiler of this report at the following address:

Dr. Norman F. H. Bright, Mineral Sciences Division, Mines Branch, Department of Energy, Mines and Resources, 555 Booth Street, Ottawa, Ontario, K1A 0G1.

The following notice relating to the International Bibliographies, published earlier by the National Bureau of Standards, Washington, D. C., and more recently taken over by Dr. M.G. Hocking of Imperial College, London, England, has been received from him with the request that it be included in the national bibliographies, so that the recipients of these documents shall be fully informed concerning the availability and prices of back and future issues of the "International Bibliographies on High-Temperature Chemistry and Physics of Materials", published under the auspices of the International Union of Pure and Applied Chemistry.

## IUPAC: Bibliography on the High-Temperature Chemistry and Physics of Materials: Availability and Prices

## 1. Back Issues

July, Aug., Sept. 1968 and earlier issues; free. For these, please apply to: Dr. T. Coyle, Inorganic Chemistry Division, N.B.S., Washington, D.C. 20234, U.S.A.

Oct., Nov., Dec. 1968 to Jan., Feb., March 1970: These are available as NBS Special Publications 315 and 315-1 to 315-5, price 75 cents (except 315-3 which is \$1.00) and are available from U.S. Government Printing Office, Washington, D.C. 20402, U.S.A.

July, Aug., Sept. 1970 (<u>14</u>, No. 3) and onwards; available from M.G. Hocking, Metallurgy Department, Imperial College, London, S.W.7, England. These are 90 cents each, postage paid (add 75 cents for air mail delivery). The first issue in this series (<u>14</u>, No. 2) is out of print and only available as a Xerox copy, price 3.00, postage paid.

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BIBLIOGRAPHY OF WORK ON HIGH-TEMPERATURE CONDENSED STATES PUBLISHED IN CANADA, JANUARY-MARCH, 1972

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International Union of Pure and Applied Chemistry Commission on High Temperatures and Refractories

> Bibliography (January 1 to March 31, 1972) for Canada.

collected by Dr. Norman F.H. Bright, Mines Branch, Ottawa, Ontario, K1A 0G1.

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- A. Devices for achieving temperatures above 1500°C.
  - Industrial Applications of Carbon Dioxide Lasers.
     W. W. Duley and J. N. Gonsalves (Physics Department and Centre for Research in Experimental Space Science, York University, Toronto, Ontario).
     Canad. Res. and Devel., 5 [Jan/Feb], 25-29, 40 (1972).
  - Induction Furnace Lining Materials and Installation.
     S.B. Larson (Kaiser Aluminum and Chemical Corporation). Canad. Clay and Ceramics, 45 [1], pp. 12, 14, 32, 34 (1972).
  - Application in the Steel Industry of Large Line-Frequency Induction Furnaces.
     J. E. Rehder (Metals Reduction and Energy Centre, Mines Branch, Department of Energy, Mines and Resources, Ottawa, Ontario).
     Mines Branch Information Circular IC 278, October 1971 (Department of Energy, Mines and Resources, Ottawa, Ontario).
- B. Devices for measuring and controlling temperatures above 1000°C

Nil

C. Devices for physical measurements at temperatures above 1000°C

Nil

- D. <u>Properties, at temperatures below 1000°C</u>, of materials that melt above <u>1500°C</u>
  - a. Metallic materials

- Resistivity and Thermopower of a Series of Ni-Fe Invar Alloys. Barry E. Armstrong and Robin Fletcher (Physics Department, Queen's University, Kingston, Ontario). Canad. Journ. Phys., <u>50</u> [3], 244-250 (1972).
- X-Ray Diffraction Analysis of Sputtered Tantalum Films During Sectioning.
   E.S. Walker, W.D. Westwood and F.C. Livermore (Bell-Northern Research, Ottawa, Ontario).
   Journ. Canad. Ceram. Soc., <u>40</u>, 69-73 (1971).
- b. Non-metallic materials
  - The Kinetics of Titanium Dioxide Agglomeration in an Agitated Liquid Suspension.
     E. F. Wahl and C.G.J. Baker (Faculty of Engineering Science, University of Western Ontario, London, Ontario).
     Canad. Journ. Chem. Engg., <u>49</u> [6], 742-746 (1971).
- c. Mixed materials

Nil

- E. Properties, at temperatures above 1000°C, of materials that melt above 1500°C
  - a. Metallic materials
    - High-Temperature Transport Properties of Palladium.
       M.J. Laubitz and T. Matsumura (Division of Physics, National Research Council of Canada, Ottawa, Ontario).
       Canad. Journ. Phys., <u>50</u> [3], 196-205 (1972).

#### b. Non-metallic materials

- Interaction of CO<sub>2</sub> Laser Radiation with Solids. II: Drilling of Fused Quartz.
   W. W. Duley and J. N. Gonsalves (Centre for Research in Experimental Space Science and Physics Department, York University, Toronto, Ontario).
   Canad. Journ. Phys., <u>50</u> [3], 216-221 (1972).
- Strengthening Polycrystalline Ceramics by Compressive Surface Layers.
  H.P. Kirchner (Ceramic Finishing Company, State College, Pennsylvania, U.S.A.).
  Journ. Canad. Ceram. Soc., 40, 15-18 (1971).

- A New <sup>1</sup>∆ <sup>1</sup>∆ Transition of the TiO Molecule.
   C. Linton (Department of Physics, University of New Brunswick, Fredericton, New Brunswick).
   Canad. Journ. Phys., 50 [4], 312-316 (1972).
- c. Mixed materials

## Nil

- F. <u>Properties</u>, at temperatures above 1000°C, of materials that melt below 1500°C
  - a. Metallic materials

#### Nil

### b. Non-metallic materials

- The Effects of Sintering Atmosphere on the Properties of Strontium Ferrite Permanent Magnets. Sutarno, W.S. Bowman and G.E. Alexander (Mineral Sciences Division, Mines Branch, Department of Energy, Mines and Resources, Ottawa, Ontario). Journ. Canad. Ceram. Soc., 40, 9-14 (1971).
- c. Mixed materials
  - Determination of Oxygen in Copper with an EMF Probe.
     W.T. Thompson and P. Tarassoff (Department of Metallurgical Engineering, McGill University, Montreal, Quebec).
     Canad. Metall. Quart., <u>10</u> [4], 315-321 (1971).

## G. Phase equilibria above 700°C

- Representation of Equilibria in Metal-Sulphur-Oxygen Systems by a Chemical Potential Diagram.
   C.B. Alcock (Department of Metallurgy and Materials Science, University of Toronto, Toronto, Ontario).
   Canad. Metall. Quart., 10 [4], 287-289 (1971).
- Vanadium in the Titaniferous Magnetites of Quebec.
   L. Kish (Quebec Department of Natural Resources, Quebec City, Quebec).
   Canad. Inst. Min. Metall. Bull., <u>65</u> [719], 117-123 (1972).

- Phase Relationships in the Calcium Chloride-Calcium Carbide System. J.F. Maillot and D.R. Morris (Department of Engineering, University of Moncton, Moncton, New Brunswick). Canad. Journ. Chem., 50 [6], 839-843 (1972).
- H. Reactions at temperatures above 700°C
  - a. Chemical reactions generating another substance.
    - Electrolytic Deposition of Silicon and of Silicon Alloys. Part III: Deposition of Silicon and Aluminum Using a Copper Cathode.
       G. Bøe, K. Grjotheim, K. Matiašovský and P. Fellner (Institute for Inorganic Chemistry, Technical University of Norway, Trondheim, Norway).
       Canad. Metall. Quart., 10 [4], 281-285 (1971).
    - The Production of Barium Titanate from Barium Sulphate and Titanium Dioxide in the Presence of Sodium Carbonate at High Temperature.
       J.O. Chilvers and D. Barham (Department of Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, Ontario).
       Journ. Canad. Ceram. Soc., 40, 55-57 (1971).
    - Rates of Reaction of SO<sub>2</sub> with Metal Oxides. David W. DeBerry and Karl J. Sladek (University of Texas, Austin, Texas, U.S.A.). Canad. Journ. Chem. Engg., <u>49</u> [6], 781-785 (1971).

    - Continuous Low-Temperature Synthesis of Silicon Carbide.
       F.W. Maine, G.W. Bate, R.E. Bot and R.T. Woodhams (Technical Centre, Fiberglass Canada Limited, Sarnia, Ontario).
       Journ. Canad. Ceram. Soc., <u>40</u>, 81-88 (1971).
    - Canadian Observations on the Proposed ISO/TC-102/SC-3 Method for Measuring the Relative Reducibility of Natural and Processed IronOres. D.A. Reeve and J.H. Walsh (Metals Reduction and Energy Centre, Mines Branch, Department of Energy, Mines and Resources, Ottawa, Ontario).

Mines Branch Technical Bulletin TB 144, January 1972 (Department of Energy, Mines and Resources, Ottawa, Ontario).

- Preparation of Strontium-Iron Oxide SrFe<sub>12</sub>O<sub>19</sub> from Fe<sub>2</sub>O<sub>3</sub>-Na<sub>2</sub>CO<sub>3</sub>-SrSO<sub>4</sub> Mixtures Containing Al<sub>2</sub>O<sub>3</sub> and SiO<sub>2</sub> Impurities.
   R.J. Routil and D. Barham (Department of Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, Ontario).
   Journ. Canad. Ceram. Soc., 40, 1-7 (1971).
- Pyrochlores. VII: The Oxides of Antimony: an X-Ray and Mössbauer Study.
   David J. Stewart, Osvald Knop, Conrad Ayasse and F. W. D. Woodhams, (Department of Chemistry, Dalhousie University, Halifax, Nova Scotia). Canad. Journ. Chem., <u>50</u> [5], 690-700 (1972).
- Calcination of Gibbsite.
   T.A. Wheat (Mineral Processing Division, Mines Branch, Department of Energy, Mines and Resources, Ottawa, Ontario).
   Journ. Canad. Ceram. Soc., 40, 43-48 (1971).
- b. Crystal growth of a component from melt or vapour.

Nil

- c. Physical diffusion without the formation of a new component.
  - Solubility of Oxygen in Copper Mattes.
     F.Y. Bor and P. Tarassoff (Department of Chemical Engineering, Noranda Research Centre, Pointe Claire, Quebec).
     Canad. Metall. Quart., <u>10</u> [4], 267-271 (1971).
  - Theories of Hot Pressing.
     A.C.D. Chaklader (Department of Metallurgy, University of British Columbia, Vancouver, British Columbia).
     Journ. Canad. Ceram. Soc., <u>40</u>, 19-28 (1971).
- J. Review Articles
  - The State of Plasma Science Activity in Canada. Anon. Canad. Res. and Devel., <u>5</u> [Jan/Feb], 30-33 and 40-41 (1972).
  - Technology of New Materials (mostly metals). Various authors. Canad. Machinery and Metallworking, <u>83</u> [1], 41-62 (1972).

- 3.a. Canadian Mineral Industry in 1971. Various authors from Mineral Resources Branch, Department of Energy, Mines and Resources, Ottawa, Ontario. Canad. Min. Journ., 93 [2], 43-65 (1972).
  - b. Mineral Reviews in Detail.
    Various authors from same organization as for 3.a.
    Canad. Min. Journ., <u>93</u> [2], 66-156 (1972).
  - c. Milling and Process Metallurgy: Technical Advances in Canada in 1971.

D.E. Pickett (Mineral Processing Division, Mines Branch, Department of Energy, Mines and Resources, Ottawa, Ontario). Canad. Min. Journ., <u>93</u> [2], 201-224 (1972).

4. Control of Copper Losses in Reverberatory Slags - A Literature Review.
J.C. Yannopoulos (Newmont Exploration Limited, Danbury, Connecticut, U.S.A.).
Canad. Metall. Quart., <u>10</u> [4], 291-307 (1971).

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