

Mines Branch Information Circular IC 271

BIBLIOGRAPHY OF HIGH-TEMPERATURE CONDENSED  
STATES RESEARCH PUBLISHED IN CANADA,

APRIL - JUNE, 1971

by

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SYNOPSIS

This report contains bibliographic information concerning research work on high-temperature condensed states published in Canadian journals from April 1 to June 30, 1971.

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Direction des mines, Circulaire d'information IC 271

BIBLIOGRAPHIE DES RECHERCHES EFFECTUÉES  
DANS LE DOMAINE DES ÉTATS CONDENSÉS AUX  
TEMPÉRATURES ÉLEVÉES, AU CANADA,  
D'AVRIL À JUIN, 1971

par

Norman F.H. Bright\*

RÉSUMÉ

Le présent rapport contient des renseignements bibliographiques sur les recherches effectuées sur les états condensés aux températures élevées, publiées dans les revues scientifiques canadiennes au cours de la période d'avril 1 à juin 30, 1971.

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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 Refractories of the International Union of Pure and Applied Chemistry. The present document covers the three-month period from April 1 to June 30, 1971, 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:

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The XXVIth IUPAC Conference, i. e., the business meetings of the Union, will take place in Washington, D. C., during the period July 15th to 24th, 1971. The Commission on High Temperatures and Refractories will hold meetings during that period and the collator of these bibliographies hopes to be present.

In the next issue of this series of Information Circulars, details will be given of any matters of general interest to the recipients that were discussed at these Commission meetings.

The XXIIIrd International Congress of IUPAC, i. e., the technical sessions, will be held in Boston, Massachusetts, during the period July 25-30, 1971. Inasmuch as these meetings will deal mainly with topics related to Organic Chemistry and to Macromolecular Chemistry, they are not likely to hold much of interest to the recipients of these Bibliographies and no further details concerning them will be given here.

The attention of recipients is drawn to an International Colloquium on the Study of Crystalline Transformations at High Temperatures above 2000°K, that will be held on September 27th to October 1st, 1971 at the Laboratoire des Ultra-Réfractaires, Odeillo, Pyrénées Orientales, France, under the auspices of the Centre National de la Recherche Scientifique of France. Details can be obtained from,

Dr. Marc Foëx,  
Laboratoire des Ultra-Réfractaires,  
B. P. 5-66-Odeillo,  
Pyrénées Orientales, France.

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

APRIL - JUNE, 1971

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

Bibliography (April 1 to June 30, 1971)  
for Canada

collected by Dr. Norman F.H. Bright, Mines Branch, Ottawa

A. Devices for achieving temperatures above 1500°C

1. The Electron-Beam Continuous Hearth Refining Process and its Products.

Thomas H. Harrington (Airco Vacuum Metals, Berkeley, California, U. S. A.),

Canad. Metall. Quart., 10 [ 2 ], 137-145 (1971).

B. Devices for measuring and controlling temperatures above 1000°C

Nil

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

Nil

D. Properties, at temperatures below 1000°C, of materials that melt above 1500°C

a. Metallic materials

1. Anodic Oxidation of Tantalum.

P.S. Wilcox and W.D. Westwood (Bell-Northern Research and Development Laboratoires, Ottawa, Ontario).

Canad. Journ. Phys., 49 [12], 1543-1548 (1971).

b. Non-metallic materials

1. Effect of Heat Treatment and Reducing Agent on Remanence and Coercivity of Reduced Hematite Ores.

T.T. Toomver and H.U. Ross (Department of Metallurgy and Materials Science, University of Toronto, Toronto, Ontario).

Canad. Metall. Quart., 10 [1], 65-67 (1971).

2. Optical Constants of Sputtered Ferrite Films.

W.D. Westwood and A.G. Sadler (Bell-Northern Research and Development Laboratoires, Ottawa, Ontario).

Canad. Journ. Phys., 49 [9], 1103-1113 (1971).

3. Low-Field Susceptibility of Asbestos.  
A. A. Winer and D. Karpoff (Mineral Processing Division, Mines Branch, Department of Energy, Mines and Resources, Ottawa, Ontario) and D. T. A. Symons (Geological Survey of Canada, Department of Energy, Mines and Resources, Ottawa, Ontario).  
Mines Branch Research Report R232, September 1970 (Mines Branch, Department of Energy, Mines and Resources, Ottawa, Ontario).

c. Mixed materials

Nil

E. Properties, at temperatures above 1000°C, of materials that melt above 1500°C.

a. Metallic materials

Nil

b. Non-metallic materials

Nil

c. Mixed materials

1. Solubility of Oxygen in Liquid Iron from 1785° to 1960°C. A New Technique for the Study of Slag-Metal Equilibria.  
P. A. Distin, S. G. Whiteway and C. R. Masson (Atlantic Regional Laboratory, National Research Council of Canada, Halifax, Nova Scotia).  
Canad. Metall. Quart., 10 [1], 13-18 (1971).
2. Thermodynamic Properties of Dissolved Oxygen in Liquid Iron-Copper Alloys.  
E. S. Tankins (Aero Materials Department, Naval Air Development Centre, Warminster, Pennsylvania, U. S. A.).  
Canad. Metall. Quart., 10 [1], 21-23 (1971).
3. Thermodynamic Properties of Dissolved Oxygen in Iron-Gold Alloys.  
E. S. Tankins and J. F. Erthal (Aero Materials Department, Naval Air Development Centre, Warminster, Pennsylvania, U. S. A.).  
Canad. Metall. Quart., 10 [1], 25-27 (1971).

F. Properties, at temperatures above 1000°C, of materials that melt below 1500°C.

a. Metallic materials

Nil

b. Non-metallic materials

1. Thermodynamics and Constitution of Ferrous Silicate Melts.  
P. A. Destin, S. G. Whiteway and C. R. Masson (Atlantic Regional Laboratory, National Research Council of Canada, Halifax, Nova Scotia).  
Canad. Metall. Quart., 10 [2], 73-78 (1971).

c. Mixed materials

Nil

G. Phase equilibria above 700°C

1. Phase Transitions in Two-Dimensional Spin Systems.  
D. D. Betts, C. J. Elliott and R. V. Ditzian (Department of Physics, University of Alberta, Edmonton, Alberta).  
Canad. Journ. Phys., 49 [10], 1327-1334 (1971).
2. The Silver-Calcium System.  
A. N. Campbell and W. H. W. Wood (Department of Chemistry, University of Manitoba, Winnipeg, Manitoba).  
Canad. Journ. Chem., 49 [8], 1315-1316 (1971).
3. Electrolytic Deposition of Silicon and of Silicon Alloys.  
Part I: Physicochemical Properties of the  $\text{Na}_3\text{AlF}_6$ - $\text{Al}_2\text{O}_3$ - $\text{SiO}_2$  Mixtures.  
K. Grjotheim, K. Matiašovský, P. Fellner and A. Silný (Institute of Inorganic Chemistry, Technical University of Norway, Trondheim, Norway).  
Canad. Metall. Quart., 10 [2], 79-82 (1971).
4. Plagioclase-Scapolite Equilibrium.  
D. R. Houghton (Queen's University, Kingston, Ontario).  
Canad. Mineral., 10 [5], 854-870 (1971).
5. Phase Equilibria in the System  $\text{NaAlSi}_3\text{O}_8$ - $\text{NaAlSiO}_4$ - $\text{H}_2\text{O}$  up to 15kb. A Theoretical Discussion.  
Ki-Tae Kim and B. J. Burley (Department of Geology, McMaster University, Hamilton, Ontario).  
Canad. Journ. Earth Sci., 8 [5], 549-557 (1971).
6. The Solubility of Water in Melts in the System  $\text{NaAlSi}_3\text{O}_8$ - $\text{NaAlSiO}_4$ - $\text{H}_2\text{O}$ .  
Ki-Tae Kim and B. J. Burley (Department of Geology, McMaster University, Hamilton, Ontario).  
Canad. Journ. Earth. Sci., 8 [5], 558-571 (1971).



7. The System  $\text{Bi}_2\text{S}_3$ - $\text{Sb}_2\text{S}_3$ .  
G. Springer and J. H. G. Laflamme (Mineral Sciences Division, Mines Branch, Department of Energy, Mines and Resources, Ottawa, Ontario).  
Canad. Mineral., 10 [5], 847-853 (1971).
8. Investigations on the System Consisting of Calcium Oxide, Magnesium Oxide and Alloys of Aluminum-Silicon-Iron.  
J. R. Wynnyckyj and L. M. Pidgeon (Department of Metallurgy and Materials Science, University of Toronto, Toronto, Ontario).  
Canad. Metall. Quart., 10 [2], 105-113 (1971).

#### H. Reactions at temperatures above 700°C

1. The Determination of Calcium Carbide and its Dissociation Products in Fused Calcium Chloride.  
C. Aksaranan, V. Dosaj, D. R. Morris and S. H. White (Department of Chemical Engineering, University of New Brunswick, Fredericton, New Brunswick).  
Canad. Journ. Chem., 49 [12], 2014-2017 (1971).
2. Treatment of Ilmenite Ore in a Plasma Jet Reactor.  
R. A. S. Brown (Research Council of Alberta, Edmonton, Alberta).  
Canad. Metall., Quart., 10 [1], 47-55 (1971).
3. Thermodynamic Investigation of the Reaction  $\text{CoSO}_4(s) \rightleftharpoons \text{CoO}(s) + \text{SO}_3(g, l)$  by Electromotive Force Measurements.  
A. W. Espelund and S. N. Flengas (Department of Metallurgy and Materials Science, University of Toronto, Toronto, Ontario).  
Canad. Journ. Chem., 49 [9], 1545-1549 (1971).
4. Melting Rates of Furnace or Ladle Additions in Steel Making.  
R. I. L. Guthrie and L. Gourtsoyannis (Department of Metallurgical Engineering, McGill University, Montreal, Quebec).  
Canad. Metall. Quart., 10 [1], 37-46 (1971).
5. Formation of a Manganese-Zinc Ferrite from Iron Oxides Produced by Different Methods.  
J. M. Jaworski and S. Makolagwa (Northern Pigment Company, New Toronto, Ontario).  
Canad. Clay and Ceramics, 44, 9-22 (1971).
6. The Thermal Destruction of DDT-Bearing Powders.  
G. K. Lee, F. D. Friedrich, B. C. Post and H. Whaley (Fuels Research Centre, Mines Branch, Department of Energy, Mines and Resources, Ottawa, Ontario).  
Mines Branch Research Report R234, January 1971 (Mines Branch, Department of Energy, Mines and Resources, Ottawa, Ontario).

7. Reaction Between Cuprous Oxide and Cuprous Sulphide at 1200°C.  
D. A. Reeve and T. R. Ingraham (Extraction Metallurgy Division,  
Mines Branch, Department of Energy, Mines and Resources,  
Ottawa, Ontario).  
Canad. Metall. Quart., 10 [1], 19-20 (1971).
8. Gas-Solid Exchange Reactions: Zinc Vapour and Monocrystalline  
Zinc Telluride.  
E. A. Secco and Richard Swee-Chye Yeo (Chemistry Department,  
St. Francis-Xavier University, Antigonish, Nova Scotia).  
Canad. Journ. Chem., 49 [11], 1953-1956 (1971).
9. Drop Calorimetric Measurements on Some Chlorides, Sulphides  
and Binary Metls.  
W. T. Thompson and S. N. Flengas (Department of Metallurgy  
and Materials Science, University of Toronto, Toronto, Ontario).  
Canad. Journ. Chem., 49 [9], 1550-1563 (1971).

J. Review Article

1. Instrumentation and Control Trends in the Metals Industry.  
Anon.  
Canad. Controls and Instrumentation, 10 [5], 41-43 (1971).