Mines Branch Information Circular IC 136

BIBLIOGRAPHY AND DIRECTORY OF HIGH-TEMPERATURE CONDENSED STATES RESEARCH IN CANADA AND ELSEWHERE, JANUARY TO MARCH, 1962

by

Norman F.H. Bright*

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SYNOPSIS

This report contains bibliographic information concerning research work on high-temperature condensed states published in Canadian journals during the period January to March, 1962. A list of workers on high-temperature condensed states research in the United Kingdom is also included. Bibliographic data for France, Belgium, Austria, Germany, Great Britain, India, the Netherlands, Australia, Scandinavia, the U.S.A. and the U.S.S.R., for the same period, are given in a separate document prepared at the National Bureau of Standards, Washington, D.C. This document is supplied with this report to regular recipients, and may be obtained directly from Washington by other interested parties.

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Direction des mines

Circulaire d'information IC 136

BIBLIOGRAPHIE ET RÉPERTOIRE DES RECHERCHES EFFECTUÉES DANS LE DOMAINE DES ÉTATS CONDENSÉS AUX TEMPÉRATURES ÉLEVÉES, AU CANADA ET AILLEURS, DE JANVIER À MARS 1962

par

Norman F. H. Bright*

RÉSUMÉ

Le présent rapport contient des données bibliographiques sur les recherches effectuées dans le domaine des états condensés aux températures élevées, dont les résultats ont été publiés dans les revues techniques du Canada au cours de la période comprise entre janvier et mars 1962. Il s'y trouve également une liste de personnes qui procèdent à des recherches sur les états condensés aux températures élevées au Royaume-Uni. Les détails bibliographiques relatifs à la France, à la Belgique, à l'Autriche, à l'Allemagne, à la Grande-Bretagne, aux Pays-Bas, à l'Australie, à la Scandinavie, aux États-Unis et à l'URSS pour la même période sont présentés dans un document distinct préparé par le National Bureau of Standards, de Washington (D. C.). Ce document est fourni aux abonnés réguliers en même temps que le présent rapport tandis que les autres personnes ou organismes intéressés peuvent l'obtenir en s'adressant directement à Washington.

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INTRODUCTION

This report is a further contribution to the quarterly series of bibliographic bulletins of information on high-temperature condensed states research which have been published as Mines Branch Information Circulars at intervals since March, 1960, on behalf of the Sub-commission on Condensed States of the Commission on High Temperatures and Refractories of the International Union of Pure and Applied Chemistry.

This present document contains

(a) a bibliography of work in this field published in Canadian scientific and technical journals during the period January to March, 1962, and

(b) a list of laboratories and workers engaged in research on condensed phases at high temperatures in the United Kingdom; this list has been compiled by Dr. J.P.H.Shaw of Imperial Chemical Industries Ltd., General Chemicals Division, Castner-Kellner Works, Widnes, England. It is a revision and expansion of an earlier list issued in mid-1961.

With this bibliography, as a separate document for the regular recipients, is a copy of a bibliography published by the National Bureau of Standards, Washington, D.C.; it contains information on work in this particular field published during the

same period of time in France, Belgium, Austria, Germany, Great Britain, India, the Netherlands, Australia, Scandinavia, the U.S.A. and the U.S.S.R. This information was supplied by scientists in the countries concerned to Dr. J.J. Diamond, of the N.B.S., who has collated the information and translated the titles of all the papers quoted into English. However, the information for the U.S.S.R. was collected by Dr. Marc Foëx from data supplied by the Centre National de la Recherche Scientifique, France, and forwarded by him to Dr. J.J. Diamond. Dr. Foëx supplied the information for both France and Belgium, Professor Gunnar Hägg for all the Scandinavian countries, and Professor H. Nowotny for both Austria and Germany. For the other countries, the contributors are as listed on the cover page of the N.B.S. document.

It will be seen, from the table of contents of the N.B.S. document, that an attempt has been made in this current issue to limit and define, more precisely than heretofore, what is meant by "high-temperature". The figure of 1500°C has been accepted as the lower limit for defining a high-temperature reaction or a refractory material. In listing the properties of materials, a distinction has been drawn between those properties that are relevant below 1000°C and those that apply to temperatures above this figure. In previous issues there has been no such specification of the precise temperature ranges to which the various sections of the bibliographic data were intended to apply. This action has been taken as a result

of the I.U.P.A.C. Commission meeting held in Montreal in August, 1961.

Those who have received previous Information Circulars in this series, but not on a regular basis, may, if they wish, obtain copies of the N.B.S. bibliographies by communicating directly with Dr. J.J. Diamond in Washington.

Any further information concerning these bibliographies can be obtained from the writer of this report at the following address:

Dr. Norman F.H. Bright,
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Mines Branch,
Department of Mines and Technical Surveys,
Ottawa, Canada.

The writer is particularly anxious that anyone not currently receiving these reports, but who would wish to do so, should be added to the mailing list. Similarly, anyone currently on the mailing list, to whom these reports are no longer of interest, should advise the writer accordingly, so that the name may be removed from the mailing list.

PART I

BIBLIOGRAPHY OF WORK ON HIGH-TEMPERATURE CONDENSED STATES PUBLISHED IN CANADA IN JANUARY-MARCH, 1962

International Union of Pure and Applied Chemistry
Commission on High Temperatures and Refractories
Sub-commission on Condensed States

Bibliography (January, February, March, 1962)

for Canada

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

A. Devices for achieving temperatures above 1500°C

nil

B. Devices for measuring and controlling temperatures above 1500°C

nil

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

1. The temperature of a shielded surface.
P. Stephas.
Canad. Journ. Phys., 40 [2], 151-162 (1962).

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

a. Metallic materials

1. Titanium in the chemical industry.
R.J. McPherson.
Chemistry in Canada, 14 [2], 22-23 (1962).

2. The hydrometallurgical production of cobalt.
W. Kunda, J.P. Warner and V.N. Mackiw.
Canad. Inst. Min. Met. Bulletin, 55 [597], 25-29 (1962).

3. A note on diffusion in metals.
Y.L. Yao.
Canad. Journ. Phys., 40 [3], 367-370 (1962).

b. Non-metallic materials

1. Apparent densities and internal surface areas of selected carbon blacks.
P.L. Walker, Jnr. and W.V. Kotlensky.
Canad. Journ. Chem., 40 [2], 184-188 (1962).

c. Mixed materials

nil

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

a. Metallic materials

1. Production of high-purity iron by the floating zone method.
W.M. Williams, G.B. Craig and W.C. Winegard.
Canad. Inst. Min. Met. Bulletin, 55 [597], 35-37 (1962).

b. Non-metallic materials

nil

c. Mixed materials

nil

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

a. Metallic materials

1. Physical metallurgy and uses of gold. The properties of gold and alloys containing gold.
L. Badone and N.S. Spence.
Mines Branch Information Circular IC 129, Department of Mines and Technical Surveys, Ottawa. October, 1961.

b. Non-metallic materials

nil

G. Phase equilibria

1. The system silver-indium-gallium.
   A.N. Campbell and W.F. Reynolds.
   Canad. Journ. Chem., 40 [1], 37-45 (1962).

2. The thermodynamics of dilute ternary austenite solutions.
   J.S. Kirkaldy and G.R. Purdy.
   Canad. Journ. Phys., 40 [2], 202-207 (1962).

3. Solid solubility of gold in germanium.
   A.S. Syed.
   Canad. Journ. Phys., 40 [2], 286-288 (1962).

H. Reactions at temperatures above 1000°C

1. Diffusion in multicomponent metallic systems: V - Interstitial diffusion in dilute ternary austenites.
   J.S. Kirkaldy and G.R. Purdy.
   Canad. Journ. Phys., 40 [2], 208-217 (1962).

PART II

DIRECTORY OF WORKERS ON HIGH-TEMPERATURE CONDENSED STATES RESEARCH IN THE UNITED KINGDOM

LIST OF LABORATORIES AND WORKERS IN THE UNITED KINGDOM ENGAGED IN HIGH-TEMPERATURE CONDENSED STATES RESEARCH

Laboratory	Personnel	Interests
Aberdeen University, Chemistry Department.	F.P. Glasser L.D. Glasser (Mrs.) H.F.W. Taylor	Phase equilibria and transformations at high temperature. Crystal structures.
Armament Research and Development Estab., Fort Halstead, Kent.	J.A. Belk A.J. Nicol-Smith	Arc and electron beam melting, processing and properties of refractory metals (e.g., molybdenum and tungsten).
Associated Electrical Industries Ltd., Research Department, Rugby, Warwickshire.	M.A. Cayless M.G. Clarke J.S. Jackson J.J. Matthews G.C.E. Olds H. Ramsdon F.W.G. Rose I. Williams	Properties and uses of refractory metals and ceramics at high temperatures. Arc and electron beam melting. Thermoelectric materials. Transparent refractories and electron-emitter plasma-jets.
Associated Electrical Industries Ltd., Research Laboratory, Aldermaston, Berkshire.	G.A. Geach F.O. Jones A.G. Knapton A.A. Woolf	Constitutional diagrams and alloy theory. Defect-structure properties. Modes of deformation. Irradiation effects. Boron.
Birmingham University, Industrial Metallurgy Department.	J.A. Rogers G.W. Rowe P.T. Spick	Friction and wear properties of materials.
British Ceramic Research Association, Penkhull, Stoke-on-Trent.	N.F. Astbury P. Popper H.M. Richardson	Industrial refractories. Ceramics for electrical and nuclear uses.

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Laboratory	Personnel	Interests
Building Research Station, Garston, Watford, Hertfordshire.	W. H. Gutt A.J. Majumdar J.H. Welch	Phase equilibria in oxide systems (cements and slags).
Cambridge University, Metallurgy Department.	C. Baker J. Freise G.W. Groves A. Kelly	Plastic properties and radiation effects on high-temperature materials (graphite, magnesium oxide and boron nitride).
Imperial College, Metallurgy Department, London, S.W. 7.	C.B. Alcock E.H. Baker F.D. Richardson B.C.H. Steele J.R. Thomson J.W. Tomlinson	Slag equilibria at 1000-2000°C. Molten salts. Reactions between gases and solid oxides, sulphides and sulphates.
Manganese Bronze and Brass Co., Ltd., London Wall Building, London, E.C. 2.	I. Jenkins	
Morganite Research and Development, Battersea Church Road, London, S.W. 11.	L. Cartz	Sintering. Zone melting. Electron microscope studies at high temperature.
Morganite Research and Development, Fundamental Research Department, Northfields, Wandsworth, London, S.W. 18.	D.J. Badami C.F. Cooper R. Hussey G. Kay G.L. Kington A.C. McLeod J.B. Nelson J. Sutherland B. Wilmshurst	Preparation, reactivities, thermodynamic properties and structures of refractory materials.

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(Concluded)

Laboratory	Personnel	Interests
National Physical Laboratory, Metallurgy Division, Teddington.	O. Kubaschewski	High-temperature calorimetry and equilibria. High-temperature oxidation of metals.
Oxford University, Metallurgy Department.	W. Hume-Rothery J.W. Martin	Equilibrium diagrams of high-melting-point metallic systems. Crystal structure and mechanical properties at high temperatures.
Service Electronics Research Laboratory, Baldock, Herts.	S.J. Bass F.E. Birbeck A. Calverley P. Gurnell W.R. Harding K. Marshall	Semi-conductors. Zone refining. High-purity refractories. Refractory materials for use in valves.
Sheffield University, Metallurgy Department.	B.B. Argent B.A. Bilby C.W. Haworth R.W. Honeycombe D.J. MacDougall G.F. Modlen G.T. Protheroe A.G. Quarrell W.J.M. Tegart R.G. Ward J.M. West J.L. Woodhead	Metal constitution and structure. Phase transformations in steels. Mechanical properties, creep, and fatigue. Slag equilibria and constitution. Crystal theory.
Sheffield University, Refractories Technology Department.	G. White W.F. Ford	Sintering and bonding at high temperatures. Physical and mechanical properties and phase relationships in refractory materials.

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