

# Members admitted to the Institute since the General Meeting held on 22nd March, 1978

*Fellows:* G. C. Oldroyd, J. R. Goode, H. E. Knight, P. G. Mason, G. Pienaar.

*Members:* P. K. Bredell, P. G. Hosie, C. W. Finn, P. G. Gibson, K. G. Fisher, R. F. Sandenbergh, A. J. Walker.

*Associate Members:* H. Scott-Russell, D. F. Bradshaw, J. H. Roux, D. S. Robinson.

*Graduates:* D. B. Carey, M. P. Hay.

*Associates:* C. de Klerk Bekker, C. F. Vermaak, J. G. McCallum, A. F. Field.

*Students:* D. M. Andriess, E. J. Conradie, J. F. Deetlefs, A. W. de Villiers, D. A. R. Duke, F. du Plessis, W. F. du Toit, L. J. H. Fourie, R. P. Gould, P. C. Hagan, J. Bester, J. P. Botha, R. L. Burger, I. C. Claassen,

J. D. Gregory, H. A. Halberg, G. J. Jonck, M. W. Kruger, J. Steyl, C. A. Wright, B. W. Miles, O. V. Jevon, F. C. Kruger, S. E. C. Neuhoff, M. D. Ras, J. F. A. Robberts, W. H. Schroeder, W. Uys, T. van der Walt, P. R. S. Dorssen, W. C. Vergeer, W. G. Wessels, T. M. Yasbek, J. C. Strydom, J. A. Theron, C. van Baalen, C. van Loggerenberg, J. J. Venter, W. L. von Maltitz, P. A. Escorcio, M. B. Cortie, P. J. Nofal, D. B. Wellbeloved, D. Wiggill.

*Transfer to Member:* G. D. Kletz, I. J. Barker, L. H. Heyman.

*Transfer to Associate Member:* D. S. Robinson.

*Transfer to Associate:* A. J. Field.

## NIM reports

The following reports are available free of charge from the National Institute for Metallurgy, Private Bag X3015, Randburg, 2125 South Africa.

### Report no. 1970

*List of unrestricted NIM publications issued from 1966 to 1978.* (30th Jun., 1978).

This publication lists the 679 unrestricted reports, 263 papers, 19 patents, and 4 other technical publications that were issued as publications of the National Institute for Metallurgy from 1966 (the year of its inception) to 1st April, 1978. For ease of reference, these publications are also classified under the research programmes that gave rise to them.

Also included are details of the 2 periodicals issued by NIM and a list of the current miscellaneous publications of the Institute, which include the annual report, and brochures and leaflets of various kinds.

### Report no. 1976

*The preparation and certification of two samples of chromium ore.* (9th Sep., 1978).

The preparation of two chromium ores as reference materials is described, and the procedures used in the assessment of the homogeneity of the samples is outlined. Statistical analysis of the data submitted by 32 laboratories that resulted in the certification of the samples is presented. The certified and provisional values are as follows:

	SARM 8	SARM 9
	%	%
Al <sub>2</sub> O <sub>3</sub>	10,5 <sub>7</sub>	15,1 <sub>7</sub>
CaO	0,26	
Cr <sub>2</sub> O <sub>3</sub>	48,9 <sub>7</sub>	46,4 <sub>5</sub>
Fe (total)	14,1 <sub>3</sub>	19,4 <sub>1</sub>

MgO	14,6 <sub>9</sub>	10,8 <sub>5</sub>
MnO	0,25	0,21
SiO <sub>2</sub>	4,30	0,61
TiO <sub>2</sub>	0,24	0,56
V <sub>2</sub> O <sub>5</sub>	0,14	0,32
	p.p.m.	p.p.m.
P	39	24
S	341	28

The following are provisional values:

	%	%
CaO		0,16
FeO	13,9	17,5

### Report no. 1982

*The resistivity of mixtures of Mamatwan manganese ore and reducing agents.* (31st Aug., 1978).

The resistivities with increasing temperature up to 1400°C of Mamatwan manganese ore, Delmas coal, and Iscor coke were determined. The furnace charges consisted of mixtures of ore of a constant size range with Delmas coal or Iscor coke of three different size ranges.

The resistivities of the ore and the coal were strongly influenced by temperature and decreased by several orders of magnitude between room temperature and 1000°C. The resistivity of the coke changed only slightly between room temperature and 1400°C, and the resistivity of the coal approached that of the coke at 1200°C.

The resistivity of mixtures of ore and coke was determined by the resistivity of the ore up to 1200°C. Above that temperature, the resistivity fell steeply owing to an increase in the volume fraction of coke in the mixture and to the formation of slag. The results were similar for the three different size ranges of coke.

The resistivity of mixtures of ore and coal was determined by the resistivity of the coal up to about 600°C. Between 600 and 800°C, the resistivity of the mixture was influenced by the resistivities of both the ore and the coal. Above 1000°C, there was a sharp decrease in the resistivity because of an increase in the volume fraction of the coal. As with the coke, different particle sizes of coal did not exert a definite influence on the resistivity of the mixtures. The mixtures of ore and coal and of ore and coke had a similar resistivity between 1200 and 1400°C.

#### **Report no. 1984**

*Commissioning of the AEI MS702 mass spectrometer.* (31st Aug., 1978).

The setting-up and commissioning of the AEI MS702 mass spectrometer is described. Its individual components and their use are discussed, as well as the sample preparation, analysis, and reduction of data.

A comprehensive list is given of instrumental breakdowns, and the application of the technique to several matrices is outlined. Improvements and modifications to the technique, including the use of a minicomputer, are suggested.

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## **Metallurgical slags**

The Basic Science Section of the Canadian Institute of Mining and Metallurgy is sponsoring an International Symposium on Metallurgical Slags, which is to be held in Halifax, Nova Scotia, during 24th to 28th August, 1980. The Symposium will be an integral part of the programme for the Annual Conference of Metallurgists,

which is scheduled for Halifax that year.

For further information contact Dr C. R. Masson (Chairman, Basic Sciences Section), Atlantic Regional Laboratory, National Research Council of Canada, 1411 Oxford Street, Halifax, N.S. B3H 3Z1, Canada.

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## **Mining machinery**

An international conference on mining machinery is to be held in Brisbane, Australia, from 2nd to 6th July, 1979.

Technical sessions will be conducted over the five days and will cover both surface and underground mining. Contributions have been received from major equipment manufacturers and users in America, Australia, Britain, Canada, Germany, Japan, South Africa, and Sweden.

Topics to be discussed will include design, development, operation and maintenance of machines widely

used in mining, including draglines, bucket wheel excavators, shovels, haul trucks, crushing plants, continuous and longwall coal-mining equipment, hard-rock drilling and cutting machines, and mine winders.

The papers presented at the Conference will be issued to delegates in a bound volume.

All correspondence relating to the Conference should be addressed to The Conference Manager, International Conference on Mining Machinery 1979, The Institution of Engineers, Australia, 11 National Circuit, Barton, A.C.T. Australia 2600.