
Company Affiliates

The following members have been admitted to the Institute as Company Affiliates.

- AE & CI Limited.
Afrox/Dowson and Dobson Limited.
Amalgamated Collieries of S.A. Limited.
Apex Mines Limited.
Associated Manganese Mines of S.A. Limited.
Billiton Exploration S.A. (Pty) Limited.
Blackwood Hodge (S.A.) Limited.
Blyvooruitzicht G.M. Co. Ltd.
Boart International Limited
Bracken Mines Limited.
Buffelsfontein G.M. Co. Limited.
Cape Asbestos South Africa (Pty) Ltd.
Compair S.A. (Pty) Limited.
Consolidated Murchison (Tvl) Goldfields & Development Co. Limited.
Deelkraal Gold Mining Co. Ltd.
Doornfontein G.M. Co. Limited.
Durban Roodepoort Deep Limited.
East Driefontein G.M. Co. Limited.
East Rand Prop. Mines Limited.
Engineering Management Services (Pty) Ltd.
Envirotech (Pty) Ltd.
Free State Saaiplaas G.M. Co. Limited.
Fraser & Chalmers S.A. (Pty) Limited.
Gardner-Denver Co. Africa (Pty) Ltd.
Goldfields of S.A. Limited.
The Grootvlei (Pty) Mines Limited.
Harmony Gold Mining Co. Limited.
Hartebeesfontein G.M. Co. Limited.
Highveld Steel and Vanadium Corporation Limited.
Hubert Davies Heavy Equipment (Pty) Ltd
Impala Platinum Limited.
Ingersoll Rand Co. S.A. (Pty) Ltd.
Johannesburg Consolidated Investment Corp. Ltd.
Kinross Mines Limited.
Kloof Gold Mining Co. Limited.
Lennings Holdings Limited.
Leslie G.M. Limited.
Libanon G.M. Co. Limited.
Lonrho S.A. Limited.
Lorraine Gold Mines Limited.
Marievale Consolidated Mines Limited
Matte Smelters (Pty) Limited.
Natal Cambrian Collieries Limited.
Northern Lime Co. Limited.
O'okiep Copper Company Limited.
O'tjihase Mining Co. (Pty) Limited.
Palabora Mining Co. Limited.
Photometric Sorters.
Placer Development S.A. (Pty) Ltd.
President Steyn G.M. Co. Limited.
Pretoria Portland Cement Co. Limited.
Prieska Copper Mines (Pty) Limited.
Rand Mines Limited.
R. J. Spargo Limited
Rooiberg Minerals Development Co. Limited.
Rustenburg Platinum Mines Limited (Union Section).
Rustenburg Platinum Mines Limited (Rustenburg Section).
St. Helena Gold Mines Limited.
Shaft Sinkers (Pty) Limited.
S.A. Land Exploration Co. Limited.
Stilfontein G.M. Co. Limited.
The Griqualand Exploration and Finance Co. Limited.
The Messina (Transvaal) Development Co. Limited.
The Randfontein Estates Gold Mining Co. Witwatersrand Ltd.
The Robbins Co. (Africa) (Pty) Ltd.
The Steel Engineering Co. Ltd.
Trans-Natal Coal Corporation Limited.
Tvl Cons. Land & Exploration Co.
Tsumeb Corporation Limited.
Union Corporation Limited.
Vaal Reefs Exploration & Mining Co. Limited.
Venterspost G.M. Co. Limited.
Vergenoeg Mining Co. (Pty) Limited.
Vlakfontein G.M. Co. Limited.
Welkom Gold Mining Co. Limited.
West Driefontein G.M. Co. Limited.
Western Areas Gold Mining Co. Ltd.
Western Deep Levels Limited.
Western Holdings Limited.
Winkelhaak Mines Limited.

NIM reports

The following reports are available free of charge from the National Institute for Metallurgy, Private Bag 7, Auckland Park, 2006 South Africa.

Report no. 1845

The composition and mode of occurrence of gold in Witwatersrand ores and leach residues.

This report describes mineralogical and electron-microprobe investigations into the composition and the mode of occurrence of gold in Witwatersrand ores and their leach residues.

Gold is present as free gold or as gold locked in gangue minerals. The presence of free gold in the leach residues is due to incomplete leaching resulting from differences in leaching rates, composition, coatings, and morphology of the gold grains.

Thucholite contains most of the locked gold, and the effect of different types of thucholite on the flotation

and grinding properties is shown.

It is concluded that the influence of several factors should be considered in the efficient recovery of gold.

Report no. 1861

The determination of some impurities in zirconium metal by instrumental neutron-activation analysis.

This report describes the work done on the development of an instrumental neutron-activation method for the analysis of impurities in reactor-grade zirconium. Nine samples were analysed, and the results were compared with those obtained by other techniques. No statistically significant differences were observed for ten of the twelve elements that could possibly be determined by instrumental neutron-activation analysis. Cadmium cannot be determined at the 0,5 p.p.m. level, and there is doubt about the comparative values recorded for aluminium. The precision of measurement by direct

instrumental neutron-activation analysis ranges from 1,4 per cent for tungsten to 17 per cent for chromium.

Report no. 12

Exploratory tests on the concentration of tin ore from Kuils River, C.P. (29th Apr., 1966; re-issued Aug. 1976).

Gravity-concentration tests were carried out on a batch of cassiterite-bearing gravel to obtain information for the construction of a pilot-plant concentrator.

The amount of concentrate recovered in a test on 400 lb of feed was equivalent to 0,1 lb of tin per ton of material treated. Several heavy minerals (e.g. fluorite and zircon) were concentrated together with the cassiterite, but it is considered that they will not interfere with the production of a cassiterite concentrate of a salable grade.

It is recommended that the procedure to be used in the pilot plant should comprise scrubbing, desliming, and jigging, as the initial stage of the concentration process. Subsequent steps should consist of several stages of rejigging, and table concentration after screening.

Report no. 286

A mineralogical and petrographic study of the pre-Transvaal rocks in Borehole K.1, Koster district, western Transvaal. (15th Feb., 1966; re-issued Jun. 1976).

A study of the cores obtained during the drilling of the borehole K.1 in the Koster district indicated that volcanic and sedimentary rocks of the Ventersdorp System are underlain by a formation more than 1435 feet thick and of uncertain age. This formation comprises greywackes and greywacke conglomerates in its upper parts, and these grade into gneissic rocks in depth. Post-metamorphic tectonic movements have caused shearing

and microbrecciation in the rocks. It is concluded that a time break exists at their junction with the Ventersdorp System, and that the most likely correlation of the formation is with the Basement Complex.

Report no. 938

Life test on IRA 400 resin during the recovery of zinc chloride. (27th Mar., 1970; re-issued Aug. 1976).

The strong-base anion-exchange resin, IRA 400, was tested to determine how long it would remain effective in adsorbing zinc chloride from pickle liquors. After being used in 500 test cycles, which is estimated to be equivalent to 18 months of plant operation, the adsorption of the resin for zinc chloride was found to be substantially unaffected when compared with that of unused resin.

Report no. 1010

The leaching, with hydrofluoric acid, of materials containing tantalum and niobium. (8th Jul., 1970; reissued Aug. 1976).

The effects of time, temperature, and hydrofluoric acid concentration on materials containing tantalum and niobium were studied in leaching tests. The highest extractions obtained were on a sample of high-grade tantalite leached in 24, 7 N hydrofluoric acid at a temperature of 100 °C for six hours.

It was concluded that high extractions could be obtained at lower temperatures with longer reaction times.

Satisfactory material balances were obtained for both tantalum and niobium in these tests, indicating that the analytical techniques developed for this work are sufficiently accurate.

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