

PUBLISHED REPORTS - MINERAL PROCESSING

[For overseas customers, please include an additional \$50 Australian to cover bank fees, postage and handling costs.]

<p>REPORT 1 DUNN, J. G, 1983. "The flash smelting of nickel sulphide concentrates".</p> <p>The thermal and oxidative characteristics of two floated nickel sulphide concentrates, one from the Kambalda Nickel Operation and from Agnew Mining Corporation, as well as a mixture containing concentrates, flash furnace dust and fluxes, were investigated using Differential Thermal Analysis, Differential Scanning Calorimetry, Thermogravimetry, Electronprobe microanalysis and X-ray diffraction . KEYWORDS: Differential Thermal Analysis/Differential Scanning Calorimetry/Thermogravimetry/nickel sulphide concentrates.</p>	<p>MERIWA Project 2 [Fiche \$5, Hardcopy \$31.50]</p>
<p>REPORT 2 RUANE, M, 1983. "Carbon-in-pulp gold processing technology".</p> <p>The report critically evaluates Carbon-in-Leach versus C.I.P. processes, agitation and screening systems, performance criteria for activated carbons, elution techniques, and alternative approaches to recovering gold and regenerating carbon. Fouling of carbon is recognized as one of the main problems of the process. KEYWORDS: CIP processes/Carbon-in-leach/elution/carbon fouling.</p>	<p>MERIWA Project 10 [Fiche \$10, Hardcopy \$47]</p>
<p>REPORT 5 SMITH, I., HINCHCLIFFE, W., HOSKING, J. W., and MUIR, D. M, 1984. "Fouling studies on C.I.P. carbons and prospects for gold recovery using ion exchange resins".</p> <p>Fouled carbons from three Western Australian carbon-in-pulp plants were investigated by optimising the acid washing conditions needed to remove the major contaminants, calcium, magnesium and silica, and by measuring comparative kinetic activities of the carbon before and after acid washing, thermal regeneration, and contact with plant process waters. KEYWORDS: Carbon/acid washing/resins/fouling/gold recovery.</p>	<p>MERIWA Project 35 [Fiche \$10, Hardcopy \$41]</p>
<p>REPORT 7 DUNN, J. G. and SMITH, T. N, 1984. "Flash smelter shaft operations".</p> <p>Studies were made of the dispersion of solids entering the shaft and of the subsequent reactions among sulphide concentrate, added coal and combustion air in the flash smelting process at the Kalgoorlie Nickel Smelter. A model at 1:4 scale was employed to test alternative designs. Concentrates from the different sources showed significant variations in ignition temperature. KEYWORDS: Dispersion of Solids/Differential Thermal Analysis/Thermogravimetry/Nickel Sulphide Concentrate/Flash Smelting.</p>	<p>MERIWA Project 27 [Fiche \$5, Hardcopy \$54.45]</p>
<p>REPORT 15 BAX, A. C. and RITCHIE, I. M, 1986. "Investigation of the production of iron oxide pigments from reduced ilmenite".</p> <p>A by-product of the Becher synthetic rutile process is iron oxide, formed during the aeration reaction which rusts the iron from the reduced ilmenite. This project explored the feasibility of producing marketable iron oxide for pigmentation, by oxide calcination. KEYWORDS: Iron oxide/reduced ilmenite/pigment/synthetic rutile/oxide calcination.</p>	<p>MERIWA Project 46/64 [Fiche \$5, Hardcopy \$50]</p>
<p>REPORT 17 MUIR, D. M. and PASS, D. J, 1985. "The application of chloride hydrometallurgy to upgrading dirty base metal sulphide concentrates and processing nickel matte in Western Australia".</p> <p>This research considers the reactivity of mineral sulphides and physical properties of concentrated chloride solutions, and develops options for nickel mattes and "complex" sulphide concentrates. The corrosion characteristics of different sulphides vary widely in chloride media, and factors controlling the corrosion are determined. KEYWORDS: Chloride hydrometallurgy/leaching/electrowinning/sulphides/nickel matte.</p>	<p>MERIWA Project 15 [Fiche \$10, Hardcopy \$63]</p>
<p>REPORT 19 FARROW, J. B., RITCHIE, I. M, 1985. "Corrosion of metallic iron from reduced ilmenite".</p> <p>A mechanistic study of the aeration reaction used for removing iron from a reduced ilmenite matrix to produce synthetic rutile, is described employing two techniques, one based on the measurement of mixed potentials, and the other on measurement of the aeration rate to determine the role of the ammonium chloride electrolyte. KEYWORDS: Reduced ilmenite/aeration reactions/ammonium chloride.</p>	<p>MERIWA Project 29 [Fiche \$5, Hardcopy \$29.50]</p>
<p>REPORT 25 DUNN, J. G. and BAILEY, R, 1986. "Gold deposition during the roasting of pyritic gold concentrates".</p> <p>The study examined the effect of chloride ion and gold telluride on the tendency of gold to vaporise and then deposit during the roasting of pyritic gold ores. Samples of pyritic gold concentrates were doped with varying quantities of sodium chloride and roasted in a tube-furnace at 600°C. Similar studies were conducted in oxygen on a concentrate preleached with cyanide solution. KEYWORDS: Pyritic gold/gold extraction/gold telluride.</p>	<p>MERIWA Project 67 [Fiche \$5, Hardcopy \$30.50]</p>
<p>REPORT 33 GUPTA, A. and EREN, H, 1987. "On-line control of hydrocyclones".</p> <p>This study investigates the possibility of obtaining a consistently sized product from a hydrocyclone used as a classifier by altering the spigot diameter, the vortex finder height and the inlet flowrate. Krebs D6B — 12⁰ — 839 hydrocyclone was connected to a computer which continuously calculated the d50c value to measure the cyclones efficiency. KEYWORDS: Hydrocyclone control/slurry classification/silica slurry.</p>	<p>MERIWA Project 16 [Fiche \$10, Hardcopy \$40.50]</p>
<p>REPORT 39 SMITH, T. N., DUNN, J. G., MACKAY, J. C. and STEVENSON, L. R, 1988. "Flash smelter operating variables".</p> <p>An experimental flash reactor was developed in order to simulate the operation of the reaction shaft at the Kalgoorlie Nickel Smelter. A programme of testing was carried out to investigate the effects of (1) mineralogy of the feed material, (2) particle size of the solids, (3) addition of coal fuel to the feed, (4) oxygen enrichment of the combustion air and (5) residence time in the reaction jet. KEYWORDS: Flash smelting/nickel sulphide concentrate/particle size/reaction time/oxygen enrichment/coal addition.</p>	<p>MERIWA Project 53 [Fiche \$10, Hardcopy \$53.50]</p>

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REPORT 46	CORRANS, I. J. and HAYES, J, 1989. "The recovery of gold from leached calcine residues (with a literature review of the technology of extraction of gold from refractory ores)".	MERIWA Project 72 [Fiche \$10, Hardcopy \$51.50]
	Refractory pyrite telluride concentrates were examined and the mineralogical association of residual gold was investigated. Possible ways to improve recovery, including fine milling, gravity concentration, magnetic separation, acid leaching and digestion, pressure leaching and retreating were examined. A review of the literature is presented. KEYWORDS: Calcine/gold/pyrite/refractory/telluride.	
REPORT 51	VAUGHAN, J. P., BACIGALUPO-ROSE, S. and DUNNE, R, 1990. "Mineralogy and processing characteristics of arsenical gold ores".	MERIWA Project 87 [Fiche \$5, Hardcopy \$45]
	Samples of three arsenical gold ores - Lancefield, Paddington (Western Australia) and Cassilis (Victoria) - were subjected to fine milling followed by cyanidation to determine the amount of leachable gold, followed by detailed mineralogical investigations to explain the different responses to leaching obtained. Various aspects of processing arsenical ores are discussed. KEYWORDS: Gold/arsenopyrite/milling/leaching/mineralogy.	
REPORT 54	GOND, W. Q., PARENTICH, A., LITTLE, L. H. and WARREN, L. J, 1990. "Selective flotation of Mount Weld phosphate ore".	MERIWA Project 80 [Fiche \$10, Hardcopy \$42]
	This report describes the use of flotation as a method of upgrading Mt Weld phosphate ore. The QEM*SEM technique was used to help understand the flotation behaviour of the various minerals, particles and composite particles in the ore. A key feature of the flotation was the use of sodium silicate as a selective depressant for the iron oxides. KEYWORDS: Phosphate/ores/flotation/separation/iron/sodium silicate.	
REPORT 59	DUNN, J. G., GRAHAM, J. and AVRAAMIDES, J, 1990. "Relationships between mineralogy, roasting, and extraction of gold from refractory pyritic and arsenopyritic gold ores and concentrates".	MERIWA Project 78 [Fiche \$10, CD-ROM \$50, Hardcopy \$58.50]
	Several gold-bearing sulphidic concentrates were characterised for elemental and phase composition, particle size and surface area, and mineralogically assessed by scanning electron microscopy and electron probe microanalysis. The concentrates were roasted and the calcines characterised before being leached in cyanide. The form of the gold in the calcines and the leached residue was determined. KEYWORDS: Mineralogy/roasting/gold extraction/refractory/gold ores.	
REPORT 80	KRAMADIBRATA, S., JONES, I. O. and COX, S. J. D, 1991. "Mechanical properties of Goldfields rocks with particular emphasis on an examination of the influence of sample size on laboratory strength measurements".	MERIWA Project M149 [Fiche \$15, CD-ROM \$50, Hardcopy \$90]
	A 4.5 MN Instron stiff servo-controlled testing machine was used to conduct compression tests on samples in a range of sizes and an Instron 1342 servo-controlled universal testing machine was used for fracture toughness tests. A range of rock types from the Long Shaft Mine (at Kambalda) and the Mt Charlotte Mine (at Kalgoorlie) was tested and the rock types categorised. KEYWORDS: Rock/strength/mechanical/size effects/measurement.	
REPORT 87	SMITH, T. N., DUNN, J. G., WILD, M. B. and MACKEY, L. C, 1992. "Ignition studies in flash smelting".	MERIWA Project M141 [Fiche \$10, Hardcopy \$44]
	Following a review of published material on the process of ignition and flash smelting, a test programme was conducted on a pilot flash smelter. The variables examined were the type of coal added, the particle size to which it was ground and the quantity in which it was added to the sulphide concentrate as a fuel. KEYWORDS: Smelting/nickel sulphides/coal fuel/flash furnace.	
REPORT 92	GRIMSEY, E. J, 1992. "The solubility of cobalt in fayalite slags and factors affecting cobalt recovery".	MERIWA Project M102 [Fiche \$10, Hardcopy \$46]
	This study evaluates the behaviour of cobalt in non-ferrous smelting and converting circuits by experimentally determining the effects of silica, alumina, lime, and magnesia on the solubility of cobalt in iron silicate slags and by applying a new equation which describes cobalt recovery in terms of a readily measured thermodynamic parameter and a mass balance. KEYWORDS: Cobalt/recovery/nicke/iron/sulphide/smelting.	
REPORT 97	VAUGHAN, J. P. and CORRANS, I. J, 1993. "Mineralogy and processing characteristics of arsenical gold ores - phase 2".	MERIWA Project M136 [Fiche \$15, Hardcopy \$77.50]
	Five refractory gold ores were characterised according to their mineralogy and refractory behaviour. The mineralogy and processing response of flotation concentrates produced from the ores were investigated. Ultrafine milling was used to recover all fine particulate gold. Gold deportment in individual sulphide minerals was measured using electron microprobe and ion microprobe. The sulphides in the flotation concentrates were oxidised by roasting, pressure, and bacterial methods. Gold recovery by cyanidation of the oxidised pulps was compared with the ore mineralogy. KEYWORDS: Gold ores/arsenic/mineralogy/processing/refractory ores.	
REPORT 105	DUNN, J. G., WARREN, L. J. and WEISSENBORN, P. K, 1993. "Upgrading ultrafine iron ore".	MERIWA Project M128 [Fiche \$15, Hardcopy \$86.50]
	A laboratory scale selective flocculation process, capable of recovering iron oxide from a sample of ultrafine (< 10 µm) iron ore tailings containing kaolinite and other gangue minerals, was developed. Under optimum conditions, a feed containing 46.6% iron produced a concentrate of 63.5% iron with an overall recovery of 58%. KEYWORDS: Iron ore/ultrafine/up-grading/flocculation.	

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REPORT 113 AVRAAMIDES, J., RITCHIE, I. M., JAYASEKERA, S. and ZHENG, J. L., 1993. "Control of copper in gold electrowinning".	MERIWA Project M191 [Fiche \$5, Hardcopy \$41]
A fundamental electrochemical study of the deposition of gold and copper in cyanide media, and a simulation of industrial electrowinning practice using a laboratory-scale cell, are described. The variables studied were free cyanide concentration, pH, agitation, temperature and the initial ratio of gold to copper in the solution. KEYWORDS: Gold/copper/electrodeposition/differential extraction.	
REPORT 115 SMITH, B. J., KEPERT, D. L. and PATRICK, V. A., 1993. "The study of heteropolytungstates for heavy liquid mineral separations".	MERIWA Project M186 [Fiche \$5, Hardcopy \$26]
A number of polytungstates were prepared and studied as part of a search for new, safer heavy liquids to replace the toxic heavy liquids such as tetrabromoethane and thallium malonate-formate which are currently used in mineral density separations. KEYWORDS: Heteropolytungstates/heavy liquids/mineral separation/speciation.	
REPORT 125 TUTEJA, R., SPOTTISWOOD, D., MISRA, V. and SIEFKEN, T., 1994. "Studies on column flotation of sulphide ores of Western Australia".	MERIWA Project M185 [Fiche \$10, Hardcopy \$52.50]
Also refer Report 141 Supplement The separation of arsenopyrite Au ores using a 7-cm diameter laboratory scale flotation column, a 20-cm diameter pilot scale column, and for some, a 250-cm industrial flotation column, was compared. Scale-up considerations were tested using the 20-cm pilot scale column in parallel with the 250-cm plant column at the Harbour Lights gold mine plant. The effects of froth height, superficial air rate, superficial feed rate, feed grade, column diameter and other column variables were studied. KEYWORDS: Flotation/columns/sulphides/scale-up modelling/operating variables.	
REPORT 135 SMITH, T. N., VERBAAN, B., GIBBS, M. D., SHI, D. and WILD, M. B., 1994. "Pyrolysis and extraction of gold from refractory sulphide concentrates".	MERIWA Project M192 [Fiche \$10, Hardcopy \$60; Supplementary Report Fiche \$5, Hardcopy \$49.50, CD-Rom \$50 includes Supplementary Report]
A process for the treatment of refractory sulphidic gold concentrates by pyrolysis has been developed. The kinetics of the pyrolysis, the treatment of concentrate in a pilot-scale rotary kiln and the extraction of pyrolysed concentrate by cyanide were investigated. An economic analysis of the pyrolysis process showed a favourable comparison with conventional, oxidative roasting. KEYWORDS: Pyrolysis/refractory gold/kinetics/cyanide extraction/economics.	
REPORT 141 TUTEJA, R K, 1994. "Modelling and simulation of flotation columns".	MERIWA Project M185 [Fiche \$5.00, Hardcopy \$35.50]
Supplement to Report No. 125 Research on column flotation scale-up was carried out using gold-bearing sulphide ores. The studies led to the development of mathematical equations to describe the behaviour of columns under the conditions investigated. With the use of these models it was possible to explain entrainment in the froth layer. The effect of column diameter, feed rate, air rate, froth zone height, collection zone height and frother dosage were investigated. The response variables were recovery and grade. The results were statistically analysed and screened and converted to mathematical equations. Subsequently, computer simulations were carried out using the model equations to predict the behaviour of columns under conditions other than those studied. KEYWORDS: Column flotation/entrainment in froth/recovery/grade.	
REPORT 144 STEAD, R. J., ALECU, I. D., PENNIFOLD, R., O'RIELLY, K. J., NG, A., O'CONNOR, B., LATELLA, B. and CARTER, J., 1995. "Manufacture of alumina wear tiles using WA raw materials".	MERIWA Project M207 [Fiche \$5, Hardcopy \$26.00]
This project developed and optimised processing routes for the production of debased high wear resistance alumina ceramics utilising an Alcoa alumina. Information on each of the major stages pertinent to the processing of engineering ceramics, i.e. mixing, milling, spray drying, compaction, sintering and quality control, are presented. KEYWORDS: Alumina/ceramics/engineering/wear tiles.	
REPORT 149 DUNN, J. G and CHAMBERLAIN, A. C., 1995. "The effect of stoichiometry on the ignition behaviour of synthetic iron-nickel sulphides".	MERIWA Project M205 [Fiche \$10, Hardcopy \$74 CD-Rom \$50.00]
The effect of stoichiometry of the mineral phases affects the ease of smelting iron-nickel sulphides. Violarite and pentlandite of various stoichiometries were synthesised, and their ignition temperatures and extents of oxidation measured. KEYWORDS: Violarite/pentlandite/ignition/oxidation/flash smelting.	
REPORT 180 LABROOY, S and BAX, A C, 1997. "Gold Processing Technology"	MERIWA Project M238 [CD-Rom \$50.00]
This AMIRA project was intended to decrease cyanide plant operating costs and maintain or increase gold recovery at the same time. The report includes a literature review and a lengthy plant practise review, undertaken to assess if it could be determined whether a plant is operating in its optimum cost-efficiency area. KEYWORDS: Gold processing/cyanide/cost efficiency.	
REPORT 183 JOHNSTON, R R M., SWIFT, J D., NGUYEN, T., SIMIC, K and FARROW J B, 1997. "Improving thickener technology".	MERIWA Project M279 [Fiche \$5.00, Hardcopy \$71.00, CD-ROM \$50.00]
In this study, thickener technology concepts developed by CSIRO in a preceding project were evaluated at full scale, using two high rate thickeners operating in parallel at the site of one sponsor. Results were used to predict implications for full scale operation, in particular the flocculation efficiency and hence thickener performance. The outcomes confirmed the ability to make general predictions, and further work is required. KEYWORDS: Flocculation/thickener.	

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REPORT 192 AVRAAMIDES, J and KINSELLA, B, 1998. "Reducing the corrosion wear of steel grinding media".

MERIWA Project M272

[Fiche \$5.00, Hardcopy \$27.50]

The report concerns the first two phases of a project originally conceived in four phases; at the conclusion of the second phase it was decided not to pursue phases three and four. Phase 1, "Continuous laboratory scale milling tests to determine the reduction in corrosion wear by the addition of sodium nitrite inhibitor", was carried out using 610 kg of high carbon steel balls, 25, 40 and 52 mm in diameter to grind 50 kg/h of quartzite, at a mill density of 50% w/w. Overall weight losses were around 5 kg/trial, or just under 1% of the total ball charge, and a preliminary data assessment indicated that adding sodium nitrite inhibitor reduces the loss of grinding media by 12 - 15%. In Phase 2, "Comparative assessment of commercially available corrosion inhibitors in terms of potential cost effectiveness", a range of commercially available corrosion inhibitors were evaluated in terms of effectiveness and cost. The approaches followed included a comparative assessment of corrosion rates using weight loss measurements of steel coupons and also steel balls immersed in synthetic and mine waters containing the inhibitor, and in some cases in the presence of sulphide ore. It was shown that a greater number of inhibitors worked well in lower salinity process waters than in saline. The presence of sulphide ore lowered the effect of the inhibitors and of sodium nitrite in particular. It was found that sodium chromate and zinc sulphate/sodium compound mixtures were very good inhibitors.

KEYWORDS: Corrosion/steel balls/sodium nitrite/ore milling.

REPORT 194 BROSANAN, J and SNOW, B, 1998. "Recovery of silicon metal from dross".

MERIWA Project M258

[Fiche \$5.00, Hardcopy \$28.50]

This project developed a separation process that would allow recovery of silicon from dross, for sale at a greatly enhanced value. To recover the silicon metal two objectives had to be realised: 1. Development of a suitable mineral flotation technique to recover entrained silicon metal from dross, and 2. Development of a furnace melting process in which molten flotation concentrate is separated into a >99% Si product and a waste slag. The flotation process produced a silicon-rich concentrate and a silicon-slag tailing, achieving a concentrate grade and recovery of greater than 90% from a dross feed containing 58 weight percent silicon. The second stage of the two-part separation process involved melting the flotation concentrate, to upgrade the silicon to a saleable product with a grade of 99 weight percent silicon. Large furnace trials produced silicon metal in excess of 98 weight per cent silicon when corrected for iron contamination.

KEYWORDS: Silicon metal/recovery from dross/mineral flotation.

REPORT 202 DONECKER, P., HARRISON, K., McCORMICK, P., HARROWFIELD, J and HALAIS, C, 1999. "Activated carbon recovered from wastes of synthetic rutile operations in Western Australia".

MERIWA Project M285

[Fiche \$10.00, Hardcopy \$64.00]

The project undertook to develop cost effective methods for the recovery of activated carbon in granular and powder forms from carbonaceous wastes of four synthetic rutile operations in WA. The work showed that activated carbon from the synthetic rutile plants occupies a unique market place position in having an outstandingly high degree of mesoporosity combined with high surface area. This product has a high potential to be cost competitive.

KEYWORDS: Activated carbon/synthetic rutile/carbonaceous waste/filtration/processing.

REPORT 204 VERNON, C., WATLING, H., LAU, D., BROWN, M., PARKINSON, G., ROHL, A., LOH, J., FREIJ, S and GALE J, 1999. "Fundamentals of gibbsite precipitation".

MERIWA Project M278

[Fiche \$15.00, Hardcopy \$85.50, CD-ROM \$50.00]

This module of a larger AMIRA project was dedicated to improved understanding of the gibbsite crystallisation process. Findings include the two mechanisms by which gibbsite crystals may grow depending on conditions, and several factors that govern growth rate in the region of the spiral mechanism.

KEYWORDS: Gibbsite/crystallization/precipitation.

REPORT 210 REYHANI, M., DWYER, A., PARKINSON, G., ROSENBERG, S., HEALEY, S., ARMSTRONG, L., ROWE, S and SOIRAT, A, 2000. "Investigations at the atomic level of interactions between gibbsite and sodium oxalate in the bayer process"

MERIWA Project M255

[Hardcopy \$68.00, CD-ROM \$50.00]

This research was undertaken to explain fundamental interactions between solid sodium oxalate and gibbsite in solution. A mechanism of formation of crystal intergrowths between solid oxalate and gibbsite was demonstrated.

KEYWORDS: Gibbsite/sodium oxalate/Bayer process/flocculation.

REPORT 211 REYHANI, M., DWYER, A., FREIJ, A., PARKINSON, G., ROSENBERG, S., HEALEY, S., ARMSTRONG, L and ROWE, S, 2000. "Investigations at the atomic level of interactions between gibbsite and sodium oxalate in the bayer process" - Extension

MERIWA Project M255A

[Hardcopy \$62.50, CD-ROM \$50.00]

The extension research was aimed at elucidating the mechanisms by which a third component induces NSH/flocc formation and finding ways to counteract the flocculation.

KEYWORDS: Bayer process/flocculation/gibbsite.

REPORT 212 MCKINNON, A and PARKINSON, G, 2000. "Adsorption of oxalate seed poisons and its effect on crystallization"

MERIWA Project M256

[Hardcopy \$26.50, CD-ROM \$50.00]

This study was part of a three-year project designed to characterize the adsorption of oxalate seed poisons (OSP) onto sodium oxalate, and the effect of such adsorption on oxalate nucleation, crystallization and thickening. The effects of OSP were quantified, and a mechanistic understanding of their action was sought.

KEYWORDS: Hydrate precipitation/oxalate seed poison/alumina refining/thickening.

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REPORT 215 ILIEVSKI, D., RUDMAN, M., BEDELL, D., METCALFE, G and SCHIBECI M, 1999. "Relationship between hydrodynamics and gibbsite precipitation".
MERIWA Project M305

[Fiche \$10.00, CD-ROM \$50.00]

Techniques developed in an earlier AMIRA-supported program for investigating hydrodynamics in gibbsite precipitation were applied in this project, to understand mechanics of precipitation in laminar and turbulent flow regimes. Key findings relate to size of the agglomeration kernel and the effects of shear rate.

KEYWORDS: Crystallization/flow regime/precipitation.

REPORT 253 KARAKYRIAKOS, E and PATRICK, V, 2005. "Industrial applications using improved measurements of particle surface charge"
MERIWA Project M367

[Hardcopy \$61.50, CD-ROM \$50.00]

This research provided new information on particle surface charge in industrial liquors, through zeta potential and acoustic measurements. The DT1200 spectrometer was used in Australia for the first time to measure zeta potential and compared with Acoustosizer results.

KEYWORDS: Acoustosizer/electroacoustic spectrometer/zeta potential/gibbsite/DT1200.

REPORT 257 FLETCHER, H., GURESIN, N., KITTELTY, D., MARINOVICH, Y., MCGINNITY, J., NGUYEN, T., NICOL, M and TUFFREY, N, 2006. "Improved anode and cathode processes in base metal electrowinning"
MERIWA Project M359

[CD-ROM \$50]

The outcomes of this project include a review of alternative anode materials, and results of tests on physical and chemical properties of many anodes supplied by project sponsors. The report also includes results of studies on the corrosion of anodes for electrowinning of copper and zinc and effects of additives on corrosion rates, and describes aspects of the cathodic processes affecting the quality of copper and zinc cathodes.

KEYWORDS: Electrowinning/base metal/copper cathode/zinc cathode/corrosion.

REPORT 274 ZWINGMANN, N., GILKES, R J and SWASH, P M, 2008. "Iron oxyhydroxide characterization and modification in bauxite: Tools for predicting and improving Bayer performance"
MERIWA Project M392

[Hardcopy \$49.00, CD-ROM \$50.00]

In this study two sub-projects were carried out for the sponsor. The first one characterized Al-goethite, and the second boehmite because it can have an impact on autocrystallisation in liquors. A method of selective dissolution of gibbsite and kaolin without affecting boehmite was newly developed in the project.

KEYWORDS: Boehmite/Bayer liquor/iron oxyhydroxide/Bayer clarification/alumina processing.

REPORT 278 NICOL, M., JEFFREY, M., ZHANG, H., BARBETTI, K., STAUNTON, W and WARDELL-JOHNSON G, 2009. "Gold processing technology"
MERIWA Project M384/AMIRA P420C

[Hardcopy \$121, CD \$50.00]

The two areas investigated in the MERIWA-supported modules of this AMIRA project were the further development of the thiosulfate process for gold leaching, and exploration of several aspects of sustainable cyanide management. The thiosulfate process offers some new advantages. A model to track cyanide chemistry in a circuit by site personnel is presented.

KEYWORDS: Thiosulfate/gold leaching/cyanide chemistry/sustainable cyanide management.

REPORT 282 KARAKYRIAKOS, E., PATRICK, C J., and PATRICK V A, 2010. "Measuring particle surface charge and particle interactions in process liquors"
MERIWA Project M390

[Hardcopy \$96, CD-ROM \$50.00]

This 3 year project used the DT1200 instrument to measure zeta potential for solids in caustic solutions up to 10m NaOH. It showed that rheology is capable of reflecting changes in zeta potential of dispersions in concentrated caustic liquors, and that colour of a red mud slurry can be used to determine its relative degree of flocculation, among numerous other results.

KEYWORDS: Bayer liquor/red muds/zeta potential/liquor rheology/electrical double layer.

REPORT 288 VAN EMDEN, B. and PATRICK, V.A., 2010. Enhanced electrostatic separation by reducing stains on HT roll separators.
MERIWA Project

[Hardcopy \$47.00, CD- \$50.00]

This study identified ways to prevent high resistance stains forming on electrostatic rolls in mineral sand processing. Coatings prepared from fine tungsten carbide in a range of polymers were tested in the laboratory and trialed to produce stains and determine the wear resistance of coatings.

KEYWORDS: Mineral sand processing/high tension rolls/electrostatic separation/resistance stains/ tungsten carbide.