



Light Metals Research Centre



THE UNIVERSITY OF AUCKLAND
NEW ZEALAND

Activities	Metal ores	Electrodes	Refractories	Electrolysis	Environmental	Metal casting & Forming	Metal finishing
Materials performance & characterisation	Phase analysis of transition aluminas.	High temperature cathode & anode testing.		Cell failure analysis for life extension.		Anodised surface characteristics.	Corrosion of Mg & Al items.
Mechanistic studies	Alumina dissolution, surface chemistry.	High temperature inert anode experiments.	Silicon carbide under Na & temperature gradients.	High purity aluminium, heat transfer & current effects.	Spent cathode recycling. F, S, COS emissions.	Surface chemistry of extruded components.	Surface segregation in Mg & Al alloys.
Industry troubleshooting		Smelter anode problems.	Insulation profiles for smelters. Autopsies.	Aluminium, Titanium technical assessment. Plant disruptions.	Greenhouse audits for NGAs. Emissions.	Anodising. Semi-solid casting for properties.	Li-ion batteries. Coatings.
Process modelling	Direct reduction of Ti ores.	Cathode temperature cycling. Anode connections.	Refractory service temperature over time. Refractory design.	Energy efficiency. MHD instability.	Energy recovery, power modulation.	Energy losses and furnace management.	GaN, TiN, TiO _x N _y materials.
Process design	Gas scrubbing, alumina dustiness.	Inert anodes & cathodes.	Refractory design for cells & furnaces.	Heat exchanger for walls.	Energy recovery from low temperature flows.	Semi-solid casting for properties.	Coatings for parts.
Training & postgraduate courses	Smelter-based training courses on site Smelting Certificate & Diploma courses at Auckland, New Zealand & University of New South Wales, Australia						