

# Latter-day alchemist finds fortune in sand

## Buried treasure



**WEALTH:** Common sand contains the increasingly valuable minerals titanium and iron.

By IAN KIRKWOOD

IN the old world, alchemists searched high and low for the magical catalyst that would help them turn lead into gold.

They failed, of course, but on an isolated corner of Kooragang Island, University of Newcastle chemical engineering graduate John Winter is well down the road on a far more fruitful version of the alchemists' dream.

With about 30 co-workers at Austpac Resources, Mr Winter, 36, has spent the past decade developing the tech-

nology to turn a commonly occurring sand into two highly valued materials, titanium and iron.

The patented Austpac process takes ilmenite, an iron-bearing mineral, and splits it using heat and acid into a 97 per cent pure titanium dioxide known as synrutile and a saleable iron co-product known as direct-reduction iron or DRI.

Titanium dioxide is used to make white paint pigment while DRI is an increasingly valuable feedstock for steelmaking.



**BREAKTHROUGH:** Chemical engineer John Winter at Kooragang. — Picture by Stefan Moore

Austpac has put about \$40 million into the project so far and Mr Winter is confident that the final results from the Kooragang Island demonstration plant will be good enough to have backers put up the \$120 million or so needed to build a full-scale commercial operation.

Austpac is listed on the Australian Securities Exchange and with mining

giant BHP Billiton having recently taken a 7.25 per cent stake, optimism is building.

Mr Winter said other ilmenite processes had taken the synrutile but left the iron as waste.

"We are able to use both. One tonne of ilmenite produces 500 kilograms of synrutile, 350 kilograms of iron and 150 kilograms of released oxygen," he said.

"And we are able to do it using less energy, so our carbon footprint is smaller."

The minerals boom has also helped the Austpac equation, with synrutile rising from \$500 a tonne to \$700 and DRI from \$160 a tonne to \$700.

Mr Winter said Austpac was about to sell a trial lot of DRI to the OneSteel mill at Waratah and a trial sale of synrutile to Japan.