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## SA NEWS

## University of Adelaide chemist Volker Hessel developing process for asteroid mining

Clare Peddie, Science Reporter, The Advertiser

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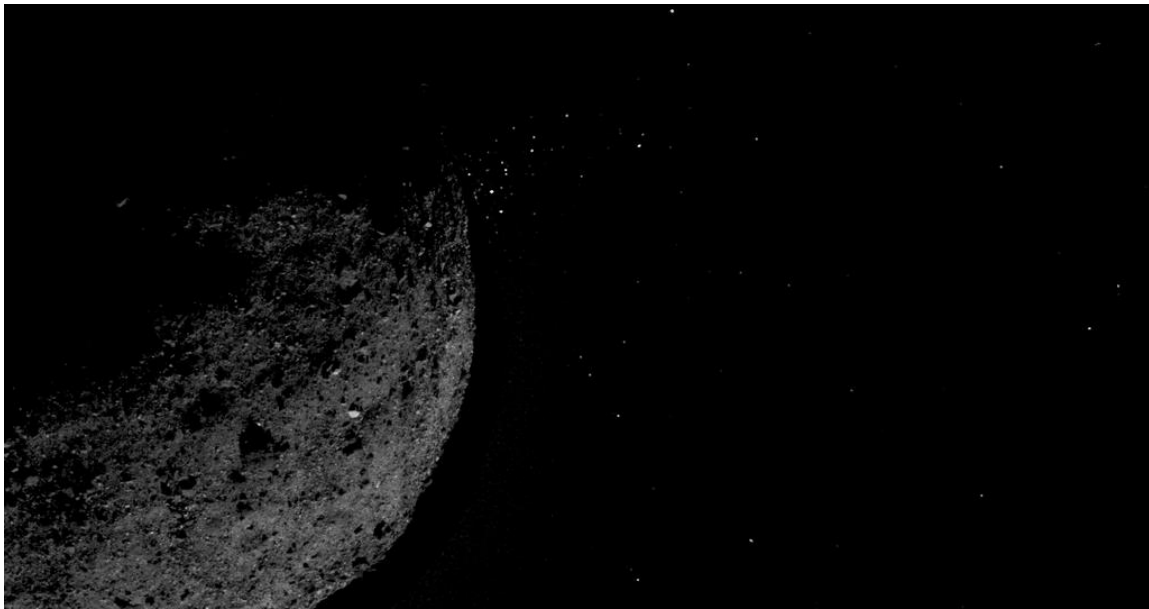


- [Adelaide to host Australian Space Agency, Mission Control Centre and Space Discovery Centre](#)

Adelaide scientists would mine metals and minerals from near-Earth asteroids under a radical plan that could tie in with the state's burgeoning space industry.

University of Adelaide chemistry Professor Volker Hessel expects the technology will become viable and commercial within a decade, because even small asteroids a few hundred metres wide would be incredibly valuable.

"Asteroids are worth trillions of dollars," Professor Hessel said.



“Asteroids are worth trillions of dollars.” – Professor Volker Hessel. Picture: NASA

“Some of the asteroids are basically flying alloys, they are pure metal, more or less.

“That is something that doesn’t exist on Earth, because it would immediately be easily oxidised, whereas asteroids can be 90 per cent iron, 9 per cent nickel, and 1 per cent cobalt and that’s a lot for each of those metals.”

#### MORE IN NEWS

 **Letters to the Editor, June 10**



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A single asteroid may have more cobalt, platinum or gold than the whole of planet Earth.

Last month, US partner Space Tango launched the first processing laboratory on the SpaceX-17 commercial resupply service mission to the International Space Station.

As deputy dean of research at the Faculty of Engineering, Computer and Mathematical Sciences, Prof Hessel is acutely aware of opportunities to become more involved in the space sector, alongside the [Australian Space Agency on Lot Fourteen](#).



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 Mining asteroids for precious metals could become a reality under an “enterprising” professor’s process.

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While others are working on satellites, Prof Hessel says “space manufacturing is wide open”. “Asteroids such as Bennu are closer to us than Adelaide is to Alice Springs, about 1000km away in Earth’s near orbit,” he said.

“Bodies which contain nickel, cobalt, and platinum as well as water and organic matter, are now within reach.”

Prof Hessel’s specialty is microfluidics and flow chemistry, which has revolutionised the manufacture of medicines and has the potential to make asteroid mining viable by reducing the need for water.

On Earth, mining involves crushing and grinding rock before separating the different metals or minerals using water, in a process called flotation.

Leaching, using a strong acid that dissolves the metals, is often the next step. Finally, solvents are used to extract and enrich the metal or mineral. Prof Hessel will use different technology that is faster and more selective.

It also works in a vacuum, under microgravity and it’s compact and lightweight, so it’s perfect for space.

He has been perfecting the process here on Earth, and is now creating mixtures that mimic different asteroids and then working to extract the key elements.

