



# Sulphur could hold key to next generation of mining deposits, research suggests

By Kathryn Diss

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**It is unlikely many people see sulphur as the answer to the question of where to find gold nuggets.**

But sulphur, an element abundant in all of Earth's layers, could hold the key to finding the new deposits needed to stimulate future mining projects, new research suggests.

A team at the Centre for Exploration Targeting (CET) in Perth is on the hunt for gold and other metals in the barren and uncharted territory of the Capricorn and Yilgarn regions.

To do that, the researchers are collecting samples of sulphur, which brought gold and other minerals together when the Earth's crust was formed.

CET researcher Crystal LaFlamme said the readily-abundant element could be used to fingerprint what other minerals lie beneath the surface.

"Sulphur is part of the Earth's core, the mantle, the crust," Dr LaFlamme said.

"We can use it as a factor towards mineralisation, where the metals might be located, like precious and base metals."

Exploration spending in WA is at a near-decade low, which means there are not many mines to carry the industry on after existing ones are exhausted.

Discovering new deposits is also getting harder, with all of the easy discoveries already being exploited.

Dr LaFlamme said new technology and methods were essential to finding new deposits in untapped regions.

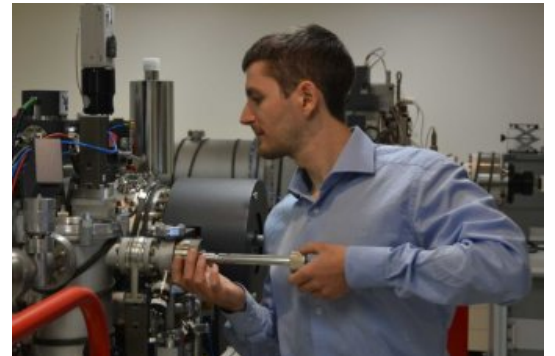
"All the rocks that were sticking out of the ground that had deposits have been found, so now we have to look under a thick layer of soil for the future deposits," she said.

"So we are trying to find a needle in a haystack and give companies a better idea about where to be looking."

## Rocks under the spectrometer

The sulphur rock samples collected in the field are taken to the centre's lab at the University of Western Australia in Perth.

They are then crushed up and closely examined inside a \$6 million spectrometer, a device which allows them to identify what precious metals are under the surface.



**PHOTO:** CET researcher Stefano Caruso working at a spectrometre, one of only 32 in the world. (ABC News: Kathryn Diss)

**MAP:** Perth 6000



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Consultant Jon Hronsky

Stefano Caruso is completing the research for his PhD and said the spectrometer — the only one in Australia and one of 32 in the world — was essential to the research.

"We are using this incredible machine to transform a really common element such as sulphur into a powerful tracer, to track the role of the sulphur from the source to the ore deposit," Mr Caruso said.

"We are going to look at the footprint of sulphur around the Yilgarn Craton and we are going to find out which are the fertile sources of sulphur that produce the actual ore deposit.

"By building the pathway between the fertile sources and the ore deposit, we can reapply this kind of association to uncovered terrains and into prospective areas."

The data generated by the spectrometer is critical to creating a road map of ore bodies in the regions, in turn helping explorers find new deposits.

## 'We're never going back'

Jon Hronsky works as a consultant to Western Mineral Services and also sits on the board of Encounter Resources.

He said the research was critical for the industry's longevity.

"The only way we are going to find the next generation of deposits is through the application of science and innovation," Dr Hronsky said.

"The ones you could find by just walking over them, they're gone — we're never going to go back to those days.

"If we don't have this sort of innovation, we're not going to be able to sustain our industry.

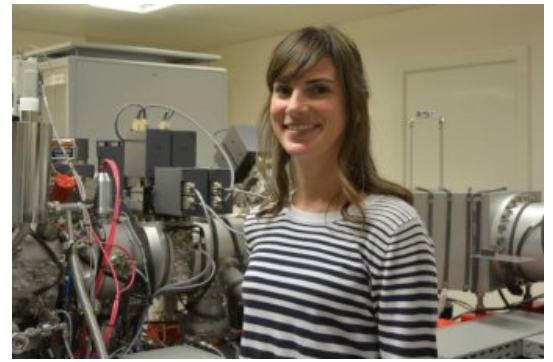
"CET is doing great work taking fundamental scientific ideas but translating them into really practical stuff we can use in the industry."

The State Government contributed \$90,000 towards the project out of a \$500,000 scholarship program aimed at discovering new mines.

The project team will spend the next four years collecting and compiling the data into a map to help companies explore for future deposits.

**Topics:** mining-industry, research, university-and-further-education, perth-6000

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**PHOTO:** Researcher Crystal LaFlamme says they are trying to find a needle in a haystack.  
(ABC News: Kathryn Diss)