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New exploration marker identified for Western Australian mineral systems

Curtin University researchers have developed new techniques using the long-lived mineral rutile to help guide explorers to undiscovered ore bodies in Western Australia's ancient rocks.

Working with the world-leading mass spectrometry facilities at Curtin University's John de Laeter Centre, Professor Neal McNaughton and his research team have developed new methods for preparing and analysing individual crystals of rutile to reveal hidden secrets of their chemical make-up that could help guide geologists searching for undiscovered ore deposits.

"Minerals like rutile are highly resistant to chemical and physical breakdown," explained Professor McNaughton.

"Individual crystals of rutile can survive unchanged even when the rocks that once hosted them have been weathered away over time – like tiny time capsules preserving a record of now-vanished geology."

Samples analysed in the Curtin study showed a clear chemical distinction between rutile associated with richly endowed gold ore systems and rutile from un-mineralised rocks. This discovery highlights the potential exploration value of rutile in the ancient landscape of Western Australia.

"By using our new approach to analysing rutile in the early stages of mineral exploration, geologists could quickly establish whether or not local rocks may have experienced a mineralising event" said Professor McNaughton.

In releasing the research report describing Professor McNaughton's findings, MRIWA CEO Nicole Roocke said "This research provides Western Australia's mineral exploration companies with a new way of quickly refining their search for undiscovered ore bodies."

"This represents an important step towards faster and more efficient exploration to support the discovery of the next generation of ore deposits hidden beneath the surface of the state."

"By supporting this research, the Western Australian government is helping our exploration industry develop the tools it needs to succeed."

The technical report summarising the research findings can be located here: <https://www.mriwa.wa.gov.au/research-projects/project-portfolio/4d-evolution-of-wa-ore-systems-rutile-pathfinder-to-ores>

For more information on MRIWA's research program, contact Nicole Roocke, MRIWA on 08 6180 4343

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