

Crime-tracking tools could point to new mineral reserves

MIAMI - Striking gold used to be a matter of luck, but tools used to track criminals, diseases and social networks could soon uncover vast troves of valuable minerals, researchers said on Tuesday.

Whether in gold or gemstones, bricks or steel, laptops or iPhones, or the soil in which we grow crops, minerals form the basis of the world's material wealth.



Researchers Ahmed Elish (Rensselaer Polytechnic Institute) and Shaunna Morrison (Carnegie Institution of Science). Photo: Anirudh Prabhu

"This new tool for understanding minerals represents an important advance in a scientific field of vital interest," said co-author Shaunna Morrison of the Deep Carbon Observatory and the Carnegie Institution for Science in Washington.

The technique uses big data and network theory, of which examples are rife in popular culture.

Many movies have depicted law enforcement agents tacking up pictures of criminals on a bulletin board, drawing lines to connect them if they knew each other.

Others have shown disease detectives drawing circles to represent the initial patient in an epidemic, and connecting them to other people they contacted as the outbreak spread.

Now, geologists say they have found a way to use the same theories, backed by troves of big data and mapping, to

uncover previously unknown locations of valuable minerals like never before.

"Mineral networks are analogous to social networks," said Morrison.

"We can rely on those statistics that have been developed by other researchers and we can expand them to apply to the mineral kingdom."

A [paper](#) describing the new approach, described as "a way to reveal mineral diversity and distribution worldwide," is published in journal *American Mineralogist*.

There are more than 5,200 known minerals on Earth, each with a unique chemical composition and atomic structure.

The approach mines databases full of information on locations around the world where minerals have been described and catalogued.

"I think this is going to expand the rate of mineral discovery in ways that we can't even imagine now," said co-author Robert Hazen of the Carnegie Institution for Science in Washington.

The approach may prove useful for mining companies, which could use the technology to predict the locations of unknown mineral deposits.

Geologists could use it to learn about minerals on Earth and on Mars.

New rare earth minerals, which are crucial for modern technology and increasingly of economic importance in a gadget-driven society, could also be uncovered.

Talks have begun with the US Geological Survey on ways to move forward on finding economically valuable minerals and resources, researchers said.

The technique has already been used to predict 145 missing carbon-bearing minerals and where to find them, leading to creation of the Deep Carbon Observatory's Carbon Mineral Challenge.

Ten have been found so far.

Source: *AFP*

For more, visit: <https://www.bizcommunity.com>