

The future of sustainable energy is in the exploitation of rare earths

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A recent technological and energy revolution has given rare earths strong importance due to their electric, magnetic and electronic properties. A group of researchers from the Institute of Physical Sciences at the Autonomous National University of Mexico (UNAM) locates and analyzes geological formations containing rare earths, as they represent a valuable option for future energy sustainability.

According to Lorenzo Martinez Gomez, project leader, [rare earth metals](#) occupy the bottom of the periodic table, and can be applied in wind generators, modern cars, cell phones, communications equipment and superconductors. They are also used in systems for engraving, printing and reading of compact discs and sound capturing with miniature microphones.

"We showed that Mexico has this mineral wealth, and we find that with the support of the National Council of Science and Technology (CONACYT) and the Commission for Science and Technology of the House of Representatives," he details.

The researcher adds that the central belt of Mexico has a very ancient geological province containing rare earths. "There, we located about 80 areas with sufficient concentration to attract mining investment," says Martinez Gomez, who recently delivered the keynote "Rare earths: strategic minerals for sustainable energy, health, electronics and communications," held on the anniversary of the San Luis Potosi Institute of Scientific and Technological Research (IPICYT).

The scientist stressed that rare earths are located in the new ecological minerals group, so called because they are important components of a wide range of clean technologies. "For example, a wind generator requires several tons of magnetic material made of alloys of such elements, like neodymium or praseodymium. They are also required for manufacturing electric and hybrid vehicles."

Another important finding, reported Martinez Gomez, regards electronic waste, making it important to extract rare earth metals. "In Mexico, about 360 thousand tons of such waste are produced yearly, including televisions, computers, cell phones and automotive components with a variety of recyclable parts of metals of interest."

Because the extraction of [rare earths](#) from electronic waste components is a major challenge, researchers are working on a project with the government of Mexico City for the development of a pilot recycling plant of electronic equipment. "We plan to finish construction later this year, which will give us a new economic activity friendly with the environment."

Provided by Investigación y Desarrollo

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