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TEXAS

Rare earth element extraction tech may give US a new edge in China trade war

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AUSTIN (KXAN) — The race for rare earth elements is on. For years, [China has dominated the industry](#) by investing in both extraction and production of an essential ingredient for everything from televisions to cars to even glasses.



A solvent carrying rare earth elements passes through a filter. (Eric Henrikson/KXAN)

Last week, [the United States and Ukraine announced a new trade deal](#). Part of this deal included access to Ukraine's mineral supply in exchange for military aid.

Now, new research from the University of Texas may give the U.S. an added edge in the race toward rare element dominance. Researchers led by Professor Manish Kumar are turning toward protein as a possible method for extracting the essential elements.

"We want to be able to come up with a method to separate lanthanides from each other and lanthanides from other things that are in the ores," said Kumar. His team's focus is on lanthanum, a rare earth element used in hybrid batteries.

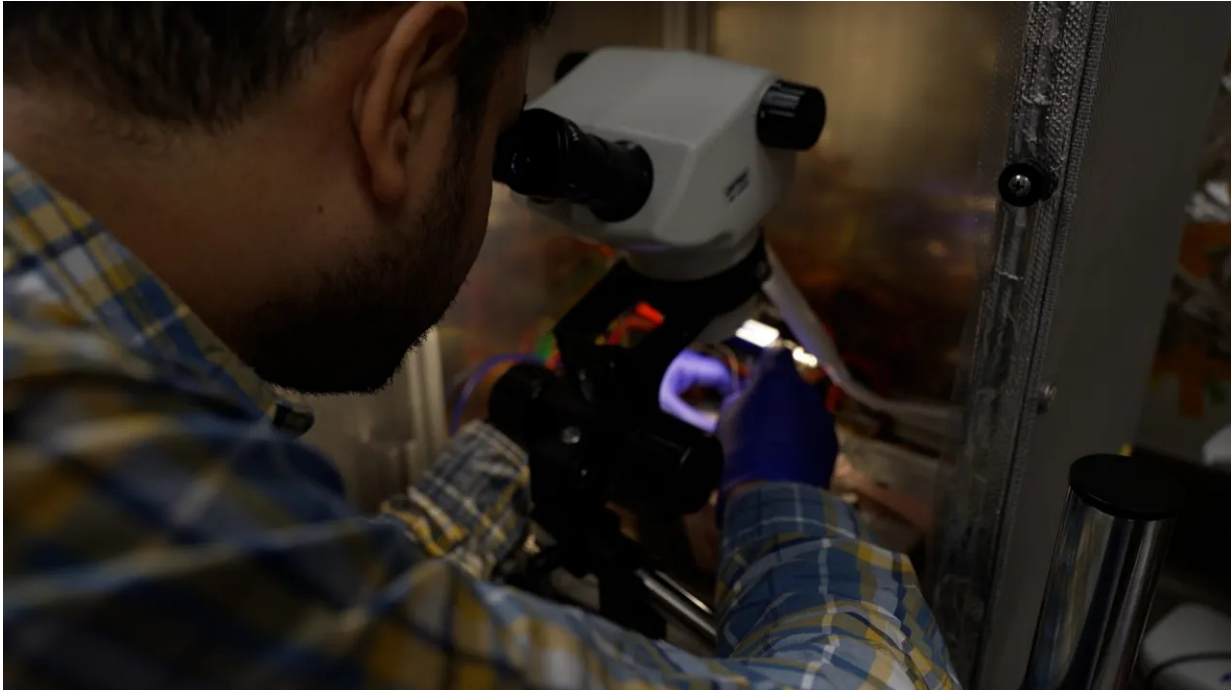
[Sunspot larger than United States spotted in new image of the sun](#)

His team, based out of the Cockrell School of Engineering, uses tiny tubes made of proteins to filter out lanthanum. The process is similar to how cells in your stomach use tiny protein tubes as a filter.

Little tiny tubes

“If you can make artificial tubes like that and put it in a membrane, then you can do similar types of separations,” Kumar said. “An electrical charge guides the element through the filter.”

Rare earth element refining typically needs a lot of chemicals and produces a lot of waste. Kerosene is used in the refining of lanthanum. Kumar’s method uses fewer chemicals and produces substantially less waste.



Dr. Harekrushna Behera measures the passage of a lanthanum through a protein tube. (Eric Henrikson/KXAN)

“It’s a much simpler way of doing it, much cheaper way of doing it, perhaps long term. And it doesn’t create a lot of waste,” Kumar said.

The process is still in the testing phase. [A recent paper published in ACS Nano showcased the results of the team’s work.](#)

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“We are planning to scale it up in the near future, but currently we are doing in a small scale,” said Harekrushana Behera, the paper’s lead author and a research associate.

Rare earth elements in Texas

Rare earth elements, despite the name, are found all over the place.

“It’s kind of a misnomer. You know, rare earth elements gives you the impression that, you know, they’re, they’re hard to find,” said Brent Elliott with the Bureau of Economic Geology at UT Austin.



A relatively small amount of waste is created using the new rare earth element extraction technique. (Eric Henrikson/KXAN)

The elements can be found in soil samples across Texas. [A 2021 report from the Texas Comptroller's office found](#) deposits in the Big Bend area in west Texas.

"It's just going to be a very low concentration and kind of a difficult thing to get out of the rock," Elliott said of rare earth element deposits.

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