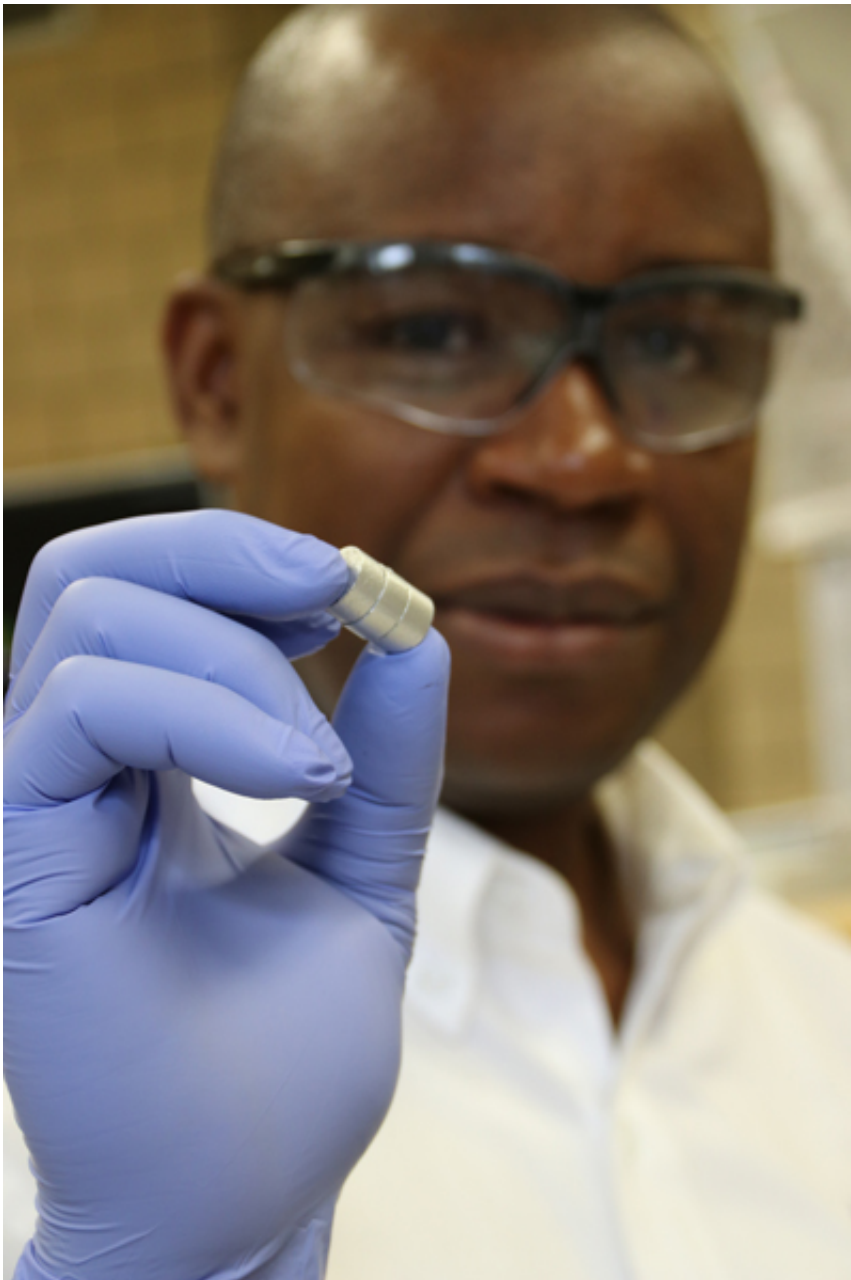


# Team manufactures magnets entirely from US-sourced rare earths

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CMI Scientist Ikenna Nlebedim holds samples of neodymium-iron-boron magnets sourced and manufactured entirely in the United States. The ability to produce rare-earth magnets domestically could provide positive support to American manufacturing and security interests. Credit: Ames Laboratory, US Department of Energy

The Critical Materials Institute, a U.S. Department of Energy Innovation Hub, has fabricated magnets made entirely of domestically sourced and refined rare-earth metals.

The small gray magnet samples are not particularly remarkable to look at. They are typical by the standard of NdFeB magnets. The process used to make them is based on the techniques used elsewhere, albeit with some significant advances in a couple of crucial steps. But in the global [rare-earth metals](#) market, the provenance is extraordinary— U.S.-mined ores, domestically processed, and domestically manufactured into magnets.

And that's important, because rare-earth magnets are used in a wide and ever-increasing number of modern technologies, and the ability to produce them domestically could have broad positive impact on national economy and security.

"This was a stretch goal of the Critical Materials Institute, to demonstrate that rare-earth magnets could be produced from mine to manufacturer, here in the United States." said CMI scientist Ikenna Nlebedim. "Rare earths are the gold standard of this generation, because they are a part of so many of our existing and developing technologies. Any future discovery that requires them can create the possibility of increased demand and supply shortages."

CMI member institution Idaho National Laboratory sourced the raw materials and refined the oxides; CMI Industry member Infinium produced the [metal](#) ingots from those oxides, which in turn were processed into magnets at CMI's home research institution at Ames Laboratory. This ability, paired with CMI's on-going research work in rare-earth metals recycling, could provide manufacturers alternatives to imported critical [materials](#).

"We were asked if it was still possible to make these magnets entirely within the U.S., now that magnet manufacturing has very largely moved overseas," said CMI Director Alex King. "This proves that we can apply advanced tools and technologies developed in the U.S. to get the job done - do it quickly, and do it rather more efficiently than it is being done elsewhere."

Provided by Ames Laboratory

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