

Researchers introduce new step in process for saving e-waste scraps

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Oak Ridge National Laboratory's Ramesh Bhave and team partnered with Momentum Technologies to develop a modular, scalable system for recycling scrap permanent magnets in e-waste. Credit: Carlos Jones/ORNL, U.S. Dept. of Energy

Researchers at Oak Ridge National Laboratory and Momentum Technologies have piloted an industrial-scale process for recycling

valuable materials in the millions of tons of e-waste generated annually in the United States.

Rare earth elements, or REEs, are strategic resources in high demand but in limited supply for advanced clean energy and defense technologies. Domestic pathways for securing supply chains are needed.

Researchers had previously demonstrated a method for [recycling](#) scrap permanent magnets in consumer electronics using membrane solvent extraction. Now the technology has met a critical step toward deployment. The system has been scaled up to achieve high-purity separations, as reported in *Advanced Engineering Materials*.

"The system is modular and scalable with a small footprint and minimal waste," said ORNL's Ramesh Bhave.

"We're working with partners toward commercialization and exploring applications to recycle REEs used in growing technology areas, such as wind power and electric vehicles," said ORNL's Syed Islam.

More information: Syed Z. Islam et al, Process Scale-Up of an Energy-Efficient Membrane Solvent Extraction Process for Rare Earth Recycling from Electronic Wastes, *Advanced Engineering Materials* (2022). [DOI: 10.1002/adem.202200390](https://doi.org/10.1002/adem.202200390)

Provided by Oak Ridge National Laboratory

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