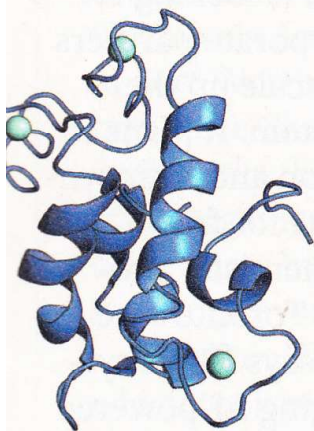


## ► Protein recovers rare earths from e-waste

Rare-earth metals are essential to making electronic components for phones, vehicles, electronic displays, and wind turbines. A new study shows that a bacterial protein called lanmodulin outperforms current methods for extracting these elements from waste streams while potentially being more environmentally friendly (*Inorg. Chem.*



### Lanmodulin

**Lanmodulin selectively binds to rare-earth metal ions (cyan) from electronic waste.**

2020, DOI: 10.1021/acs.inorgchem.0c01303).

Joseph A. Cotruvo Jr.

of Pennsylvania State University, Gauthier J.-P. Deblonde of Lawrence Livermore National Laboratory, and colleagues compared lanmodulin's ability to pull lanthanides out of electronic waste streams with that of traditional chelators. Lanmodulin was orders of magnitude more selective, capturing neodymium and europium ions while leaving behind ions present at higher concentrations, such as iron and zinc. Lanmodulin also proved to be unusually robust: rare-earth ions bound to lanmodulin at pH values as low as 2.5 and at temperatures up to 95 °C, which Deblonde calls "completely unique" to this protein. Because the protein works in an aqueous environment, it could be a greener option than typical solvent extraction procedures that produce contaminated organic waste.—MEREDITH FORE, special to C&EN