about the origins of phenomena such as magnetism. The compounds, based upon the RT\textsubscript{2}Zn\textsubscript{20} family (where R represents a rare-earth atom and T represents a transition metal atom), are mostly zinc and are “tuned” by substituting the R and T atoms. Canfield said, “We can make compounds for up to 10 transition metals, and for each of those we can include between seven and 14 rare earths. So that’s between 70 and 140 compounds.”

As reported in the May issue of *Nature Physics* (p. 334; DOI:10.1038/nphys568), one of the compounds the researchers made, YFe\textsubscript{2}Zn\textsubscript{20}, turned out to be even closer to being ferromagnetic than palladium, a nearly ferromagnetic material that scientists have traditionally studied to better understand magnetism.

Canfield describes palladium as a “runner-up” in terms of band magnetism—the magnetism of the common metals like iron, cobalt, or nickel. These metals become ferromagnetic at such high temperatures that it is difficult to study them in detail, so palladium is the next-best option.

