

Why I Coined the Term Technology Metals

written by Jack Lifton | October 19, 2026

I had been working with rare metals for 45 years when, in 2007, I coined the term ***technology metals***. The name explains why manufacturers need these materials and why investors should understand them. Their electronic, magnetic, optical and chemical properties help determine what a device can do. Understanding that relationship is the most useful place to begin a discussion of their value.

There is a second meaning in the name, and few people grasp it: without the technology, you don't have the metals. A deposit in the ground is not a supply of neodymium or dysprosium until someone has the process technology to separate, refine and convert it into a form a manufacturer can use. For decades, I have explained that this business is more technology than mining. It is an idea that still surprises many investors and policymakers, and it is one of the main reasons I chose the term.

My perspective came from the laboratory and the factory. I began my career in 1962 at Energy Conversion Devices in Detroit, working under Stanford Ovshinsky on purified metals, compounds and alloys for electronics and energy storage. Subsequent work at ITT involved materials and deposition processes for military night-vision devices. In those environments, an element's name was only the beginning of the discussion. What mattered was whether we could prepare a material with the properties, purity and consistency required for the device to function.

In the 1970s, that practical education extended to catalytic-converter substrates and coatings. The platinum-group metals

used in automotive catalysts illustrate the distinction particularly well. Platinum, palladium and rhodium acquire their industrial usefulness through the way they are prepared and incorporated into a catalyst system.

A description such as *precious metal* tells us something about their market category, but a manufacturer needs to understand how they perform. My later years running industrial businesses reinforced the same lesson through the demands of production and customers.

By the time I began writing and speaking widely about these markets, the familiar expression *minor metals* seemed inadequate to the discussion I wanted to have. In a January 2009 interview, I explained my choice directly: **“I don’t call them minor; I refer to them as the technology metals.”** A small market measured in tonnes can support a much larger market in finished goods. Calling attention to the technological function helps explain why the loss of a relatively modest quantity of material can have consequences far beyond the value of the material itself.

In August 2010, Tracy Hughes and I [visited the Bokan Mountain project in Alaska](#), owned by [Ucore Rare Metals Inc.](#) (TSXV: UCU | OTCQX: UURAF). Tracy recalls a conversation on that trip about how she planned to market the sector. She had been considering *strategic materials* or *strategic metals*, the terms the industry commonly used at the time, but she didn’t like either one. She remembers me suggesting *critical metals* and *technology metals* instead. I was already using the latter to link these materials to their applications. Apparently, she bought www.technologymetals.com that same day, and she tells me we co-own it...

The distinction between those terms is useful. The terms *strategic* and *critical* were already established in government

discussions of materials security long before my career began; both appear in a 1939 statement by the U.S. Army and Navy Munitions Board. Today, the U.S. Geological Survey's explanation of critical minerals connects their economic or national-security importance with vulnerability to supply disruption. *Technology metals* describes the function that creates the need for the material. The same metal can fit all of these descriptions, because they address different aspects of its importance.

For publishers explaining these markets, the technological connection is particularly valuable. It gives an investor a reason to follow an unfamiliar element beyond an exploration announcement or a price quotation. Understanding the device that uses the material leads naturally to questions about the required chemical form, the potential customer and the production process. Those questions make the connection between scientific possibility and a business that can sell a product.

I also co-founded Technology Metals Research in 2010. Its work brought together exploration, processing and end-use analysis for people trying to understand these markets.

The expression was already in use, and the company's name reflected that perspective. The important task was to follow a material through the successive industries that would have to handle it before it reached a customer.

Rare earths offer a particularly clear example. A conventional production route for neodymium-iron-boron permanent magnets includes recovering rare earths from a suitable feedstock, producing oxides to specification, converting them into metals, preparing alloys and manufacturing the magnet. Each operation requires its own equipment and expertise. Progress at one stage has to be matched by the ability of the next stage to accept and

use its output. Other rare earth applications require compounds with different properties, so the processing route must follow the requirements of the intended product.

Customer qualification adds another practical test. A potential supplier must establish that its product works in the customer's application and can be delivered consistently. The progression from development samples through automotive qualification to commercial shipments, described in a recent permanent-magnet manufacturing announcement, shows how distinct those milestones are. For someone accustomed to manufacturing, the customer's acceptance is a central part of the development process. It belongs in the assessment of a venture from the beginning.

This is also why I pay close attention to processing innovations. A method that improves recovery, reduces reagent consumption or produces a more consistent material can change the commercial prospects of a supply chain. Its value depends on demonstrating those improvements under conditions relevant to production. The assessment must include the cost of operating the process and the ability to sell what it makes. Laboratory success is an essential step, but industrial development requires us to show that it can be repeated economically.

The production rate matters as much as the resource. In that 2009 interview, I was already discussing the amount of material industry could actually produce in a year. A factory has a delivery schedule, and the raw-material potential of a deposit cannot by itself meet it. Supply must arrive in the required form and quantity when the customer needs it. This is the commercial discipline that I believe should guide investment in technology metals, from the development of resources through the manufacture of components.

These are the issues I will take to Seoul for [Metal Events' 22nd](#)

[International Rare Earths Conference](#), held October 27–29, 2026, at the JW Marriott Dongdaemun Square. I will attend with Arlington Innovation Partners, whose Advisory Board I have [just joined](#). On October 29, I will speak about new and newly applied process technologies that can improve the efficiency and economics of rare earth production. That subject carries the industrial meaning of technology metals into the work of building reliable supply chains, because meeting manufacturers' needs requires understanding how materials become products.

Nearly two decades after I introduced the term, I still find it useful because it keeps the application and the customer in view. That is where a credible industrial plan has to end, with a manufacturer receiving a material it can use and a supplier able to keep producing it. The capabilities we expect from modern technology depend on making that relationship work.