Scientific Achievement: Developed a machine-learned descriptor enabling the chemically accurate high-throughput prediction of temperature-dependent thermodynamics (<40 meV/at MAE).

Significance and Impact: Provides the first comprehensive look at materials stability and synthesizability across the known inorganic crystalline compounds.
- Establishes the temperature-dependent scale of metastability.
- Identifies chemical design rules and compositions for realizing new, and likely synthesizable, highly metastable materials.

Research Details: Use the SISSO approach to identify an accurate, fast descriptor for $G(T)$. Apply this descriptor to generate and analyze millions of $T$-$x$ phase diagrams (up to 1,800 K) for more than 20,000 compounds curated from the ICSD.

Physical Descriptor for the Gibbs Energy of Inorganic Crystalline Solids and Temperature-Dependent Materials Chemistry