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**CROSSROADS IN EARTH AND PLANETARY MATERIALS**

## **Data-driven abductive discovery in mineralogy**

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### **ABSTRACT**

Traditional pathways to discovery in Earth sciences rely in large measure on deductive and inductive approaches, by which measurements and observations are made in the context of established principles or testable, predictive hypotheses about the natural world. Vast, but largely untapped, Earth and life science data resources offer a potentially revolutionary alternative “abductive” approach to investigate Earth’s co-evolving geosphere and biosphere. We therefore advocate a strategic, data-driven program for accelerated scientific discovery.

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