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Planetary Materials: Recorders of the Formation of the Solar System and Planets

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Planetary materials such as samples returned from space missions and meteorites provide detailed records of the origins and early evolution of the Solar System. The presence of the decay products of short-lived radiogenic (SLR) isotopes and nucleosynthetic anomalies in planetary materials elucidate the stellar heritage and environment of the nascent Solar System. Some SLR like 26-Al further contributed to the internal heating of planetesimals, and hence their ability to differentiate, as well as setting budgets in volatile elements necessary for planetary atmospheres to develop. I will focus on recent developments in isotope cosmochemistry to constrain planetary formation, the nature of the building blocks of the terrestrial planets, and how major planetary impacts have influenced the evolution of our planet and may have set the geological conditions for life to develop.

