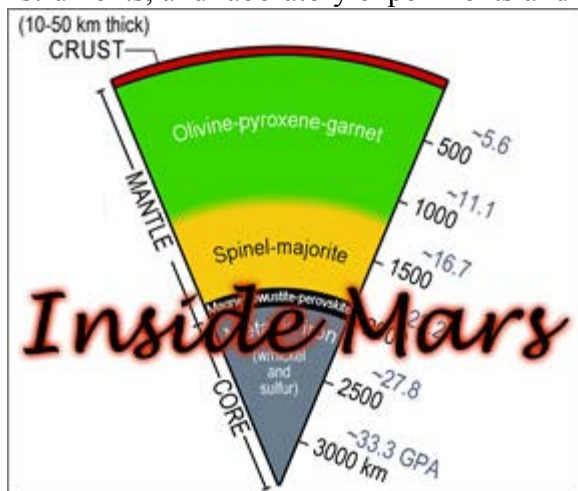


## Mantle of Mars

With Mars in the public consciousness thanks to the August 2012 touchdown and surface operations of NASA's Mars Science Laboratory Curiosity rover, now is a prime time to look a little deeper and find out what we know (and need to know) about the interior of Mars. Much of the story of a planet's formation and geological evolution is recorded in the chemical composition and minerals in its interior, seemingly far out of our reach. But just as it is true on Earth and the Moon, the interior structure and composition of Mars is revealed by seismometers, heat flow data, gravity and topography measurements, temperature/pressure experiments, and laboratory analyses of rocks. A workshop slated for September 10-12, 2012 in Houston, TX will focus on the mantle of Mars and insights gained from the variety of geophysical and geochemical datasets from past, current, and future landers/rovers, remote sensing instruments, and laboratory experiments and investigations of Martian meteorites.



This diagram shows a model of the interior of Mars originally formulated in 1997 by Constance Bertka and Yingwei Fei (Geophysical Laboratory of the Carnegie Institution of Washington) based on their comprehensive high pressure/high temperature experiments. Their work is highlighted in the **PSRD** article: [The Martian Interior](#).

and crust', High-pressure studies of the Martian mantle', and 'Crystal chemistry and mineralogy'. Another highlight of the workshop will be a presentation by Bruce Banerdt (Jet Propulsion Laboratory), principal investigator of InSight, NASA's newly selected Discovery-class mission set to launch in 2016. InSight will be a geophysical investigation of the deep interior of Mars using a seismometer, heat flow probe, and precision tracking of the rotation axis.

PSRD has covered Mars mantle research, including most recently the July 2012 headline article: [How Much Water is Inside Mars?](#) And PSRD will be attending the September workshop to report on the presentations covering the origin, evolution, and structure of the Martian mantle—all critically important for understanding the role of mantle processes in shaping the Martian surface. (See the October 2012 PSRD article: [Exploring the Mantle of Mars](#).) Ideally, the knowledge gained from Mars also informs our understanding of mantle processes in the other terrestrial planets.

Significant work with geophysical measurements, remote sensing data from orbital and landed instruments, meteorites, and theoretical modeling give insight into the timing of mantle formation, the crust-mantle evolution, and dynamics of the Martian mantle. These themes are reflected in the workshop sessions: 'Structure and dynamics of the Martian mantle', 'Temporal and geochemical evolution of the mantle

For more:

- [The 2012 Mantle of Mars Workshop](#) homepage.
- **PSRD** article: [Exploring the Mantle of Mars](#), our report of the workshop.
- [InSight: New NASA mission to take first look deep inside Mars](#), Press Release from NASA posted 20 August 2012.

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