

Caltech Associates Learn that Diamonds are Really Not Forever

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Pasadena, Calif.—Every couple knows that diamonds symbolize eternity and love, but the guests of the Caltech Associates luncheon on April 25 learned that to Dr. Jennifer Jackson, Assistant Professor of Geophysics at the California Institute of Technology (Caltech), a diamond is a hard natural material that is perfect for replicating the pressure found in Earth's deep interior.

Jackson's research attempts to understand the mineralogy and chemistry found in the Earth's core. Since it is physically impossible to sample the materials from the interior of Earth, Jackson is using a device called a diamond-anvil-cell and infrared lasers to replicate the pressures and temperatures thought to exist deep in Earth's interior.

The diamond-anvil-cell consists of two semi-flawless quarter-carat diamonds that are pressed together holding a sample of mineral material. This simulates the pressure found close to the Earth's core. An infrared laser is then shot into the diamond-anvil providing heat to the mineral sample. Since gem quality diamonds are extremely hard and transparent to a wide range of electromagnetic radiation, such as x-rays and light, the diamonds act as both pressure generators and windows, allowing the minerals' high-pressure properties to be scrutinized from the relative comforts of the laboratory.

Once the measurements have been performed on the mineral sample, the diamonds, having been through extreme pressure and heat, are often not recovered. In many instances the diamonds have cracked or exploded making them no longer usable in the experiment.

"It's hard to believe you can duplicate the pressures at the center of the earth with a device that you can hold in the palm of your hand, using diamonds," said guest Ginger Caldwell, a member of the Caltech Associates Board of Directors and a resident of La Canada. "We liked her energy and passion about her subject... a topic that could be reduced to terminology that most lay people could understand and appreciate."

"Generally the [Caltech] Associates events give you a glimpse at the fantastic developments at the forefront of science, and are presented, by the participants of that sophisticated work," said Caldwell. "Plus the Caltech faculty members are patient and kind with the audience, so you feel like a welcome participant, not a duck out of water."

To learn more about the Caltech Associates, and how you can attend an event or lecture please visit associates.caltech.edu/ or contact at 626-395-3919.

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About the Associates: Founded in 1926, the Associates is a support organization for the California Institute of Technology (Caltech) with over 1,475 members throughout the United States and abroad - a diverse cross section of members of the local & business community, Caltech alumni and faculty, and philanthropists.

[You can find this press release here](#)