

# Università degli Studi di Trieste

## Dipartimento di Fisica

# Colloquium

## Sandro Scandolo

Head, Scientific Programmes and Outreach, ICTP

Wednesday, December 14, 4.00 PM - Lecture Room A, F building, Physics Dept. - via Valerio, 2 – Trieste

## Where diamonds are made: a virtual journey to the centers of planets



Planetary interiors are totally inaccessible to direct exploration and are characterized by conditions of pressure and temperature that are difficult to reproduce in the laboratory. At those conditions materials undergo important changes including dissociation, ionization, metallization, loss of magnetism, etc. Understanding such changes has wide ranging implications not only in planetary sciences and geophysics, but also in chemistry and materials science. For example, the pressure-induced transformation of graphite into diamond, first reproduced in the laboratory in 1955, is now

an industrial process with a global market worth \$20 billions. In this context, atomistic simulations play an important role in extending our knowledge of the effects of pressure and temperature on materials well beyond the experimental limits. I will illustrate how atomistic simulations have contributed to our understanding of the interiors of giant planets and also how they have led to the discovery of a new, ultrahard form of solid carbon dioxide.



Organizzazione a cura di: E. Gozzi, E. Vesselli

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TRIESTE **fisica**

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**INFN**  
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di Fisica Nucleare

**Everyone interested in the topic is welcome to attend**

Informazioni: [seminari@ts.infn.it](mailto:seminari@ts.infn.it)