Materials Science & Engineering Seminar Series

Carnegie Mellon University
Materials Science & Engineering

presents

Magnetometric Instrumentation for the Exploration of the Cosmos

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ABSTRACT:
Like the Earth, many celestial bodies present an intrinsic magnetic field. Some others, like Mars, lost the global field and the study of the crustal rocks is the only window across the geological history to understand the characteristics of these ancient fields. Also in the martian system, magnetic measurements near Phobos and Deimos can shed some light in the question on the origin of these moons: if they had a common origin and if their origin is related with captured asteroids or it is the result of a great impact remains still undertain.
In this seminar we will describe some of the magnetometric devices developed to answer some of the hidden questions of the cosmos. The investigations of Rosetta magnetometer, the goals and challenges of AMR instrument on board Exomars 2020 and the interesting potential results of DeMag magnetometer on board DePhine exploring the martian satellites.
Finally we will explain how the instruments are exhaustively tested on ground and functionally verified in terrestrial analogues, whose studies would be o great help in the interpretation of the in situ data.

BIOGRAPHY:
Marina Díaz Michelena (PhD in 2004) is the head of the Space Magnetism Laboratory at the Spanish National Institute of Aerospace Tecnology (INTA) devoted to:

1) The conception, design and development of magnetic sensors for space applications

2) Planetary magnetic mineralogy

3) DC and low frequency magnetic testing and multiphysics modelling for the industry (U212, S80 submarines) and in particular for the space sector (Lisa Pathfinder, Nanosat-01 and 1B, Sentinel, Small Geo, Optos and SeoSat, Solar Orbiter, Juice).

Doherty Hall 2210, 11:30AM
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