

EDUCATION AND OUTREACH ACTIVITIES IN THE CONTEXT OF THE DAWN MISSION. F. Pino and J. M. Madiedo. Escuela Técnica Superior de Ingeniería, Universidad de Huelva, Campus de La Rábida, Palos de la Frontera (Huelva), Spain, madiedo@uhu.es.

Introduction: Dawn's main objective is to characterize two of the largest bodies in the main asteroid belt: asteroid Vesta and dwarf planet Ceres. This will provide important information about the conditions and processes of the solar system's earliest epoch, as these protoplanets remaining practically intact since they were formed.

Despite Ceres is only slightly farther from the Sun than Vesta, these objects have followed a very different evolutionary path as a consequence of the diversity of processes that operated during the first stages of solar system evolution. Thus, although no meteorites have been linked to this dwarf planet, the detection of a possible signature of hydrated minerals reveals that water seems to have played an important role in the evolution of Ceres. However, Vesta appears to be a dry, differentiated body, with evidence of lava flows. Telescopic observations reveal also the existence of an impact crater with a diameter of about 460 km near its south pole. The event that generated this crater may have excavated about 1% of Vesta. In fact, this catastrophic event is believed to be responsible for the existence on Earth of fragments of Vesta. Thus, although no samples of Ceres are currently available, meteorites coming from Vesta are known to exist. These achondrites are magmatic rocks known as HEDs for their principal constituents: howardites, eucrites and diogenites.

The arrival of Dawn to Vesta on July 2011 offers an excellent opportunity for education and outreach. Thus, an exhibition was organized with the aim to promote the public's interest for the Dawn mission and the role that meteorites play for our knowledge of Vesta and other bodies of the Solar System. This outreach activity was entitled "*Vesta and Ceres: the Origins of the Solar System*" (Fig. 1). It took place between October 2011 and January 2012.

Contents and structure: Different contents related to the Dawn Mission were placed in a dedicated exhibition room located at Casa de la Ciencia (CSIC), in Sevilla (Spain). Among them, over 100 specimens belonging to the Madiedo Meteorite Collection were exhibited. About 30 of these were meteorites from Vesta, including two specimens from the Puerto Lápice eucrite.

Meteorites and related materials were placed inside properly conditioned glass cabinets. Informative panels with text and images were also prepared in order to provide information about the exhibition contents. Some of these were placed inside the glass cabinets. Multimedia videos were also produced by using ad-

vanced computer animation techniques. These were continuously played on different TV screens located in the exhibition room to give a better understanding of the Dawn Mission. One of them was dedicated to describe the fall and recovery of the Puerto Lápice eucrite.



Figure 1: Image taken during the exhibition *Vesta and Ceres: the Origins of the Solar System* (Casa de la Ciencia del CSIC, Sevilla, 2011-2012).

The structure of the exhibition covered different aspects related to Dawn and the role of meteorites for our knowledge of the origin and evolution of Vesta and other bodies in the Solar System:

a) Description of the Dawn Mission. Objectives and timeline. The Dawn spacecraft. b) Basic types of meteorites. How to recognize a meteorite. What can we learn from them? c) Where do meteorites come from? Meteorites from Mars, the Moon and Vesta. Meteorites with unknown origin. d) Meteorites from Vesta: howardites, eucrites and diogenites. Their likely origin: the event that produced the large crater on Vesta's south pole. Latest images from Dawn that confirm this event. e) The role of impacts in the evolution of the Solar System: the origin of the Moon. The role

of impacts on life on Earth. f) The Puerto Lápice meteorite: a rock from Vesta.

The activity was designed for a wide audience, including students, educators and even other researchers. Guided visits to small groups were organized. During the three months that this exhibition was open, it received about 20.000 visitors and provided useful feedback for the development of similar activities in future.

The meteorite collection behind the exhibition:

The meteorites exhibited during the development of this outreach activity belong to the private meteorite collection owned by Prof. Jose Maria Madiedo. The Madiedo Meteorite Collection consists of over 800 specimens which are available for research purposes, but also for education and outreach. In fact, some of these meteorites are being regularly exhibited since 2007 in several places in this country together with multimedia materials and additional stuff that complete this collection. Among these, there are numerous impactites and "meteorwrongs".

Conclusions: We have designed and developed an exhibition related to the Dawn Mission in the framework of *Casa de la Ciencia de Sevilla* (CSIC). This was also focused on the role that meteorites coming from Vesta play for our knowledge of this asteroid. The project has provided useful feedback for the preparation of similar outreach activities in future.