

Promoting the public's interest in meteor science and meteoritics in the framework of the Windows to Science project

J.M. Madiedo (1,2)

¹Facultad de Física, Universidad de Sevilla, Departamento de Física Atómica, Molecular y Nuclear, 41012 Sevilla, Spain.

²Facultad de Ciencias Experimentales. Universidad de Huelva, 21071 Huelva, Spain (madiedo@uhu.es).

Abstract

Researchers working in Astronomical and Space Sciences can also play a very important role in education and outreach activities because of the interest of the public in these areas. Besides, direct interaction of the public with the researcher is desirable, as this gives the opportunity to get precise, detailed and interesting information from the main source of scientific data about projects that are currently being developed. With this aim, several initiatives have been developed in order to give access to the public to some of the research projects related to meteor and meteoritic science that are being developed at the University of Huelva, in Spain. These projects are related to the analysis of the flux of meteoroids impacting the Earth and the Moon, the determination of the parent bodies of these particles of interplanetary matter and the analysis of their chemical composition. When these particles survive their violent atmospheric entry and reach the ground they can be recovered as meteorites. Thus, these rocks are unique samples coming from different bodies that provide important keys related to the origin and evolution of the Solar System. One of these initiatives has been developed within the *Windows to Science* project.

1. Introduction

Windows to Science is an education and outreach project developed in Spain to promote the public's interest in research projects that are currently being developed by different public universities in Andalusia. This idea is promoted, funded and coordinated since 2008 by the museum *Parque de las Ciencias* (Granada, Spain) and the Andalusian government. In 2009 one of these *Windows to Science* was dedicated to the research projects developed at the University of Huelva in relation to

meteors, meteoroids and meteorites. In this way, a *Window* was designed to give access to the public to these research projects, including also the opportunity to interact with the researcher. This particular *Window* was entitled "Meteorites: fragments from other worlds". This initiative was oriented to a wide audience, including students, educators, children and even other researchers.

2. Contents and structure

Different contents related to the above-mentioned research projects were placed in a dedicated exhibition room located at *Parque de las Ciencias*, in Granada (Spain). Among them, over 100 specimens belonging to the Madiedo Meteorite Collection were exhibited. These included meteorites, but also thin sections and impactites.

Guided visits to small groups were organized. In this way, the aim of the different research projects involved in this *Window to Science* and some of the results obtained so far were explained. A wide number of 3D videos were also prepared by using advanced computer animation techniques. These were continuously played on different screens located in the exhibition room in order to give a better understanding of key aspects related to these research projects and also to explain fundamental concepts related to meteoroids, meteors, meteorites and impact cratering.

A meteor observing station was also setup at the exhibition room in order to show how the night sky is monitored to detect meteors and fireballs and how the emission spectrum can be used to obtain chemical information of materials ablating in the Earth's atmosphere. The procedure employed to determine the landing point of a meteorite was also explained, together with other interesting information about how

to recognize and analyze these rocks. Meteorites and impactites were placed inside glass cabinets. Meteorite thin sections were also prepared in order to show how these can provide information about these extraterrestrial rocks when they are analyzed with a petrographic microscope. A CCD camera attached to the microscope allowed displaying live images from these samples on a computer screen. Micrometeorites could also be seen through a binocular microscope and one special activity was setup so that visitors could create their own terrestrial impact crater and understand the role of different parameters such as impactor density, velocity and impact angle.

3. The Madiedo Meteorite Collection

The Madiedo Meteorite Collection played a key role in the development of this education and outreach activity. This collection is owned by Prof. Jose Maria Madiedo and consists of over 800 specimens that 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 Spain together with multimedia materials and additional stuff that complete this collection. Among these, there are also impactites, thin sections and "meteorwrongs".

4. Evaluation

One of the objectives of the *Windows to Science* project is the evaluation of this education and outreach activity. In this way, valuable feedback is obtained and this can be used to perform improvements for similar activities performed in future. With this aim, a questionnaire was designed in order to know the opinion of the visitors with respect to this initiative.

5. Summary and conclusions

An education and outreach activity related to meteoritics and meteor science has been developed in the framework of the *Windows to Science* project. This gave access to the public to several research projects that are currently being developed in these fields at the University of Huelva. This initiative consists of an innovative education and outreach project with a direct interaction between the public and the researcher. Over 100 specimens from the Madiedo Meteorite Collection were included as a key

part of the contents exhibited during the development of this *Window to Science*.



Figure 1: Images of the *Window to Science* entitled "Meteorites: fragments from other worlds" (Parque de las Ciencias de Granada, Spain).