

ChemCam Education and Public Outreach: Zapping the Public into Awareness of ChemCam, the Mars Science Laboratory, and Mars Science and Exploration. A. J. Shaner¹, S. S. Shipp¹, R. C. Wiens², S. Maurice³, O. Gasnault³, H. Newsom⁴, R. Anderson⁵, and the ChemCam team, ¹Lunar and Planetary Institute, 3600 Bay Area Boulevard, Houston, TX 77058, shaner@lpi.usra.edu, ²Los Alamos National Laboratory, Los Alamos, NM, ³Institut de Recherché en Astrophysique et Planétologie, Toulouse, France, ⁴University of New Mexico, Albuquerque, NM, ⁵USGS, Flagstaff, AZ.

Introduction: The Mars Science Laboratory (MSL) is the latest mission in NASA's 47 year program of Mars exploration. MSL launched November 26, 2011 and is scheduled to land on Mars in August of 2012. MSL, aboard the Curiosity rover, will assess whether the Martian environment ever was, or is, capable of supporting microbial life. Like its predecessors, MSL will rely on proven technology, as well as new, innovative technologies to carry out its mission. The Chemistry and Camera (ChemCam) instrument's primary objective is to rapidly characterize rocks and soils and to identify samples of greatest interest for further investigation by contact and analytical laboratory instruments onboard the Curiosity rover. ChemCam will accomplish this by firing a series of laser pulses to vaporize rock and soil samples – analyzing the light emitted by the ionized atoms with spectrometers to determine the target's composition.

ChemCam will be the first instrument to utilize a laser on the surface of another planetary body. This unique experiment in spectroscopy has the capability of capturing the public's interest and imagination. The ChemCam Education and Public Outreach (EPO) program consists of two main activities: a public outreach website and professional development for educators.

Website: Released in the spring of 2011, the ChemCam website (Figure 1) is a portal for all things



Figure 1. ChemCam website homepage.

ChemCam. Information on the instrument's goals, design, and function are presented as questions: What will ChemCam tell us? and How does ChemCam work? These questions are answered at three different levels (or steps) with the answer in each level increasing in complexity (Figure 2). This allows the public to



Figure 2. Learning about ChemCam can be done in steps, which increase in complexity in their descriptions.

learn as little, or as much, about the instrument as they wish, depending on their technical background. For the more technical audience, published papers and conference abstracts are also available on the site.

Visitors to the site can also get to know the ChemCam team through bios and video interviews. Various team members share how ChemCam works, what they hope MSL will discover, why studying Mars is important, what they find most exciting about the mission, and how they got interested in science. A team blog keeps visitors up to date on ChemCam team activities and the latest news about MSL and Mars science and exploration. A multimedia section houses videos and imagery for the general public related to ChemCam and MSL. In the education section, educators can find links to Mars-related websites, resources, and opportunities for involvement for teachers, librarians, museum/science center educators, students, and citizen scientists.

Educator Professional Development: Teacher workshops are held annually to extend participants' knowledge of Earth science to Mars. High school teachers from across the country are invited to apply to attend the summer workshops sponsored by ChemCam, held at the Lunar and Planetary Institute. *Mars Revealed: Evolving Technology, Advancing Science*, a two-day workshop (Figure 3), was held in June 2011 to pilot content for week-long workshops which will be held in outgoing years. These workshops are framed by the history of Mars exploration. Participants learn about the geology of Mars and how scientists' understanding of Mars has changed with advances in technology. Central to the workshop are standards-

based classroom activities and exploration of best practices in supporting student learning. Presentations and materials used in the 2011 *Mars Revealed* workshop can be found at <http://www.lpi.usra.edu/education/workshops/mars/agenda.shtml>.



Figure 3. Mars Revealed participants take spectra of “Mars rocks.”

Beginning in 2012, workshops also will be held for informal educators (museum/science center/planetarium educators, librarians, etc.). Participants will explore ways to engage their communities in the excitement of ChemCam, MSL, and Mars science and exploration through hands-on activities, content, and programming ideas.

Additional Information: For more information about ChemCam, please visit <http://www.msl-chemcam.com>. If you have any questions or need additional information regarding ChemCam’s EPO efforts, please contact Andy Shaner at shaner@lpi.usra.edu.