

The Open University-NASA Apollo Virtual Microscope – a tool for Education and Outreach. S. P. Kelley¹, A. G. Tindle¹, M. Anand¹, P. C. Whalley², P. Hogan², C. P. Valentine², C.T. Pillinger¹, E. K. Gibson³ and S.P.Schwenzer¹.

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Introduction: The Open University started building virtual microscopes in 1993 when a team of Earth scientists and educational technologists joined together to push the boundaries in the teaching of petrology and optical microscopy. In the last two years we have produced two major new works to support our teaching program – virtual microscopes for a level 2 course, *Geology*, and a level 3 course *Understanding the Continents*. The Apollo virtual microscope is an extension of that work designed to be freely available and on-line.

The Technology: We take more than a thousand digital images of an individual thin section. This gives us exceptional resolution and allows us to produce large area mosaics and rotation movies that can be used to simulate changing magnification or rotating the stage of a petrological microscope. We produce images in plane polarised light, between crossed polars and with reflected light. Our work is mainly web-based, but we also produced a taster iPhone app. available from the Apple iTunes store (search for “virtual microscope”).

OU-NASA Apollo Virtual Microscope: This microscope contains the entire spectrum of rock types found on the Moon, including, basaltic lavas, regolith breccias and a few soil samples. There are 28 samples in total and all six of the successful Apollo landing missions are represented. Each sample has introductory pages that incorporate a field map, field photographs, hand specimen photographs and a short description based on Lunar Compendium entries compiled by Charles Meyer of NASA. Enriching quotations by Apollo astronauts accompany some specimen descriptions. A short summary of the origin of the Moon and a precis of the Apollo missions complete the package.

The Future: We are working with other colleagues in the EUROPLANET project to produce an extraterrestrial virtual microscope (covering a spectrum of meteorite types and origins), and separately a Mars rock microscope. In the terrestrial realm, we are working on a virtual microscope of samples collected by Charles Darwin on the voyage of the Beagle (1831-1836). The website is continually being updated, feel free to browse: <http://microscope.open.ac.uk>

