

Hannah Sargeant (The Open University)

Title – The hunt for lunar water using the ProSPA instrument

Abstract – Water is a crucial resource for space explorers. It can be used to meet the life support needs of crews and also be used as rocket propellant, making use of water in its molecular form but also its constituents hydrogen and oxygen. It will likely be economically prohibitive to bring all of the water supplies from Earth needed to support long duration missions on the lunar surface and beyond. This is where the hunt for lunar water comes in. There are two main sources of water on the Moon, in its frozen form in the polar regions and also through chemical reactions with the dry lunar dust and rubble, known as regolith. I have been working with an instrument called ProSPA that will be analysing lunar regolith in a polar region of the Moon and performing experiments looking at both sources of water. I have been adapting a chemical reaction known as hydrogen reduction of ilmenite to be used with the instrument to perform one of the first water production experiments on the lunar surface. In this talk I will discuss the ProSPA instrument and the experiments we plan to perform.

Bio – Hannah is post-doctoral researcher at the Open University (UK) working in the field of lunar resources. She holds a Physics degree from the University of Sheffield and an MSc in Space Exploration Systems from the University of Leicester. Hannah recently completed her PhD in Planetary Science at the Open University where she worked with the ProSPA instrument team on water extraction techniques. Now working with the LUVMI-X rover team, Hannah is investigating ways to reduce the power required for spaceflight mass spectrometers, and ensuring they are protected from the harsh lunar environment. Hannah is a member of the PRSOPECT Science team supporting the activities planned for the European Space Agency instrument on-board the Luna-27 mission.