

# Chandrayaan-1 X-ray Spectrometer (C1XS)

• Rutherford Appleton Laboratory • University of Helsinki • ISRO Satellite Centre • University of Wales • Birkbeck/Univ.College London  
 • University of Brunel • Centre d'Etude Spatiale des Rayonnements

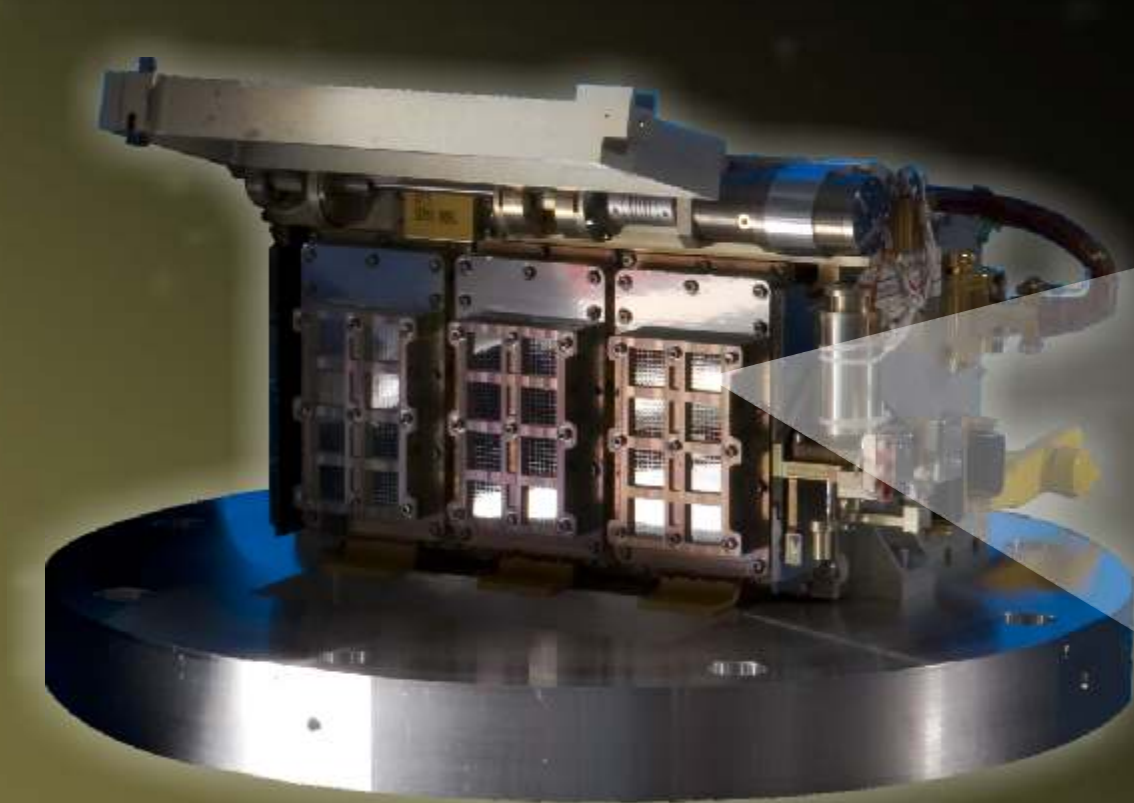
European Space Agency Indian Space Research Organisation



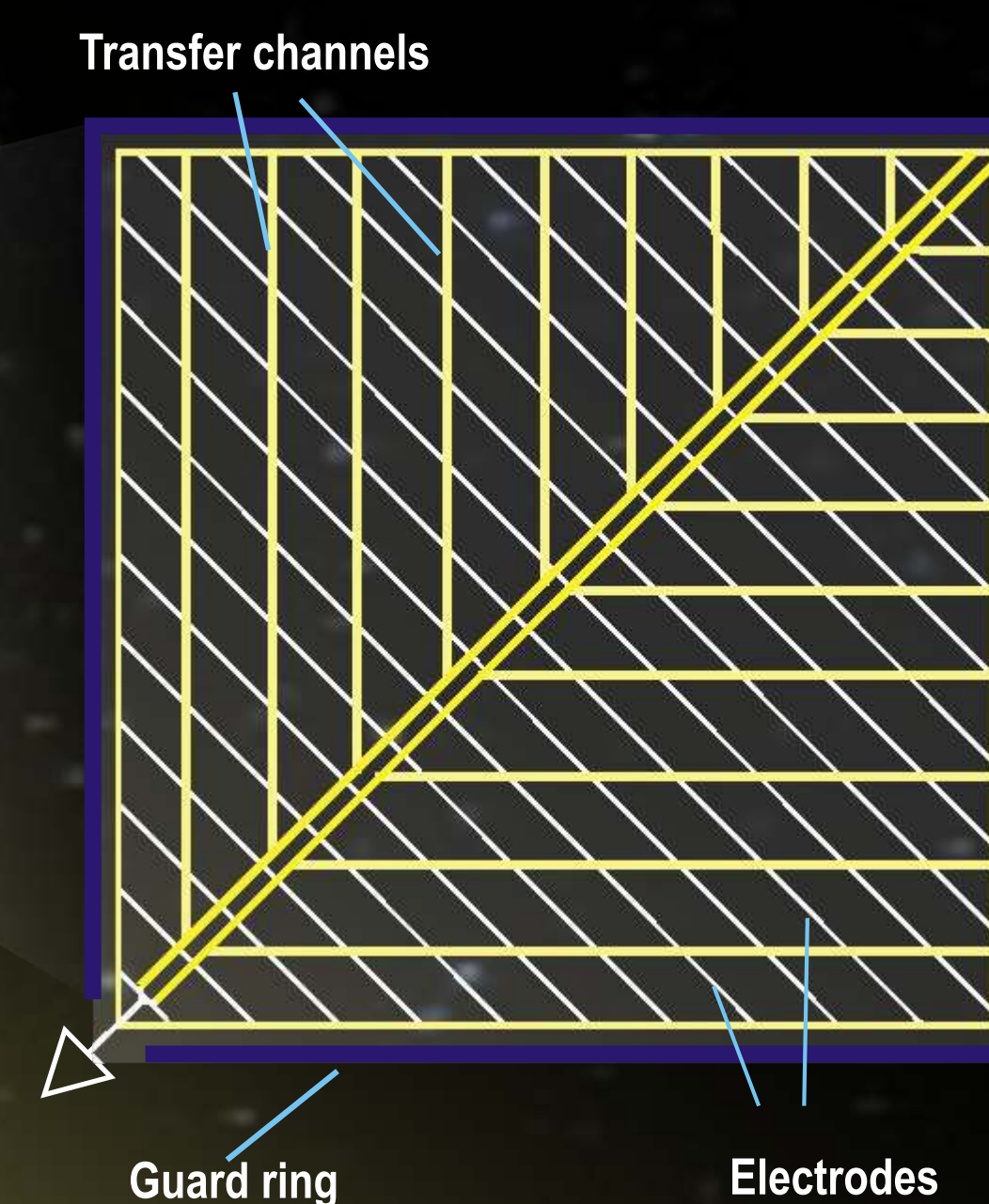
C1XS



**X-ray Solar Monitor**  
 (for simultaneous measurement of solar spectrum)  
 Si-PIN detector  
 Energy range: 1.25-20 keV  
 Geometric area: 0.001 cm<sup>2</sup>  
 FOV : 105°  
 Energy resolution : ~188 eV at 5.9 keV

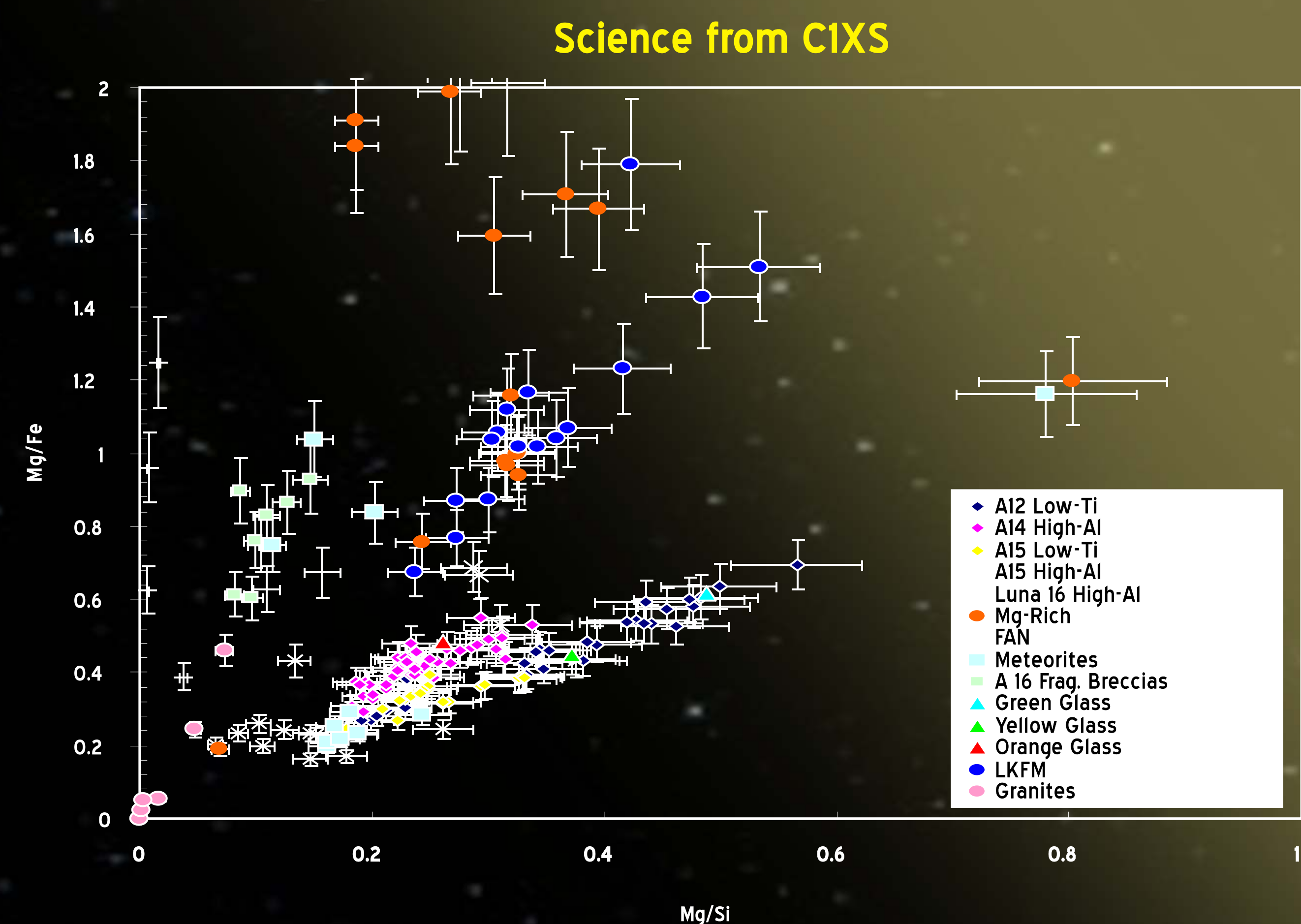
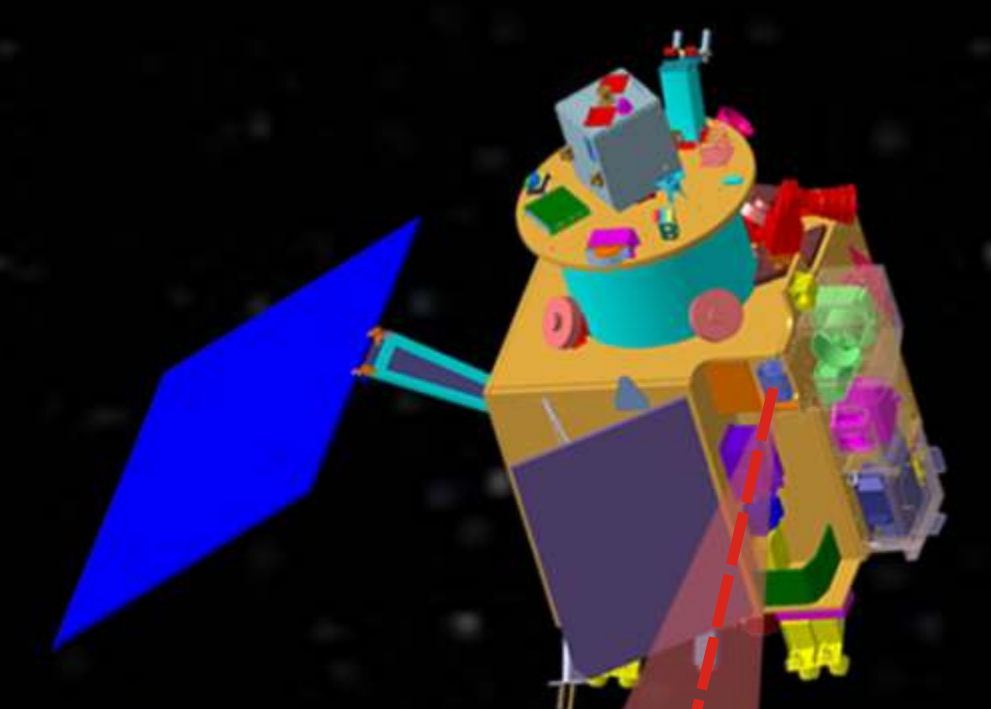


**Detector**  
 24 Swept Charge Devices  
 Energy range: 1-10 keV  
 Geometric area: 24 cm<sup>2</sup>  
 Ground resolution: 25 km  
 Energy resolution : ~100 eV at 1.48 keV (-20°C)



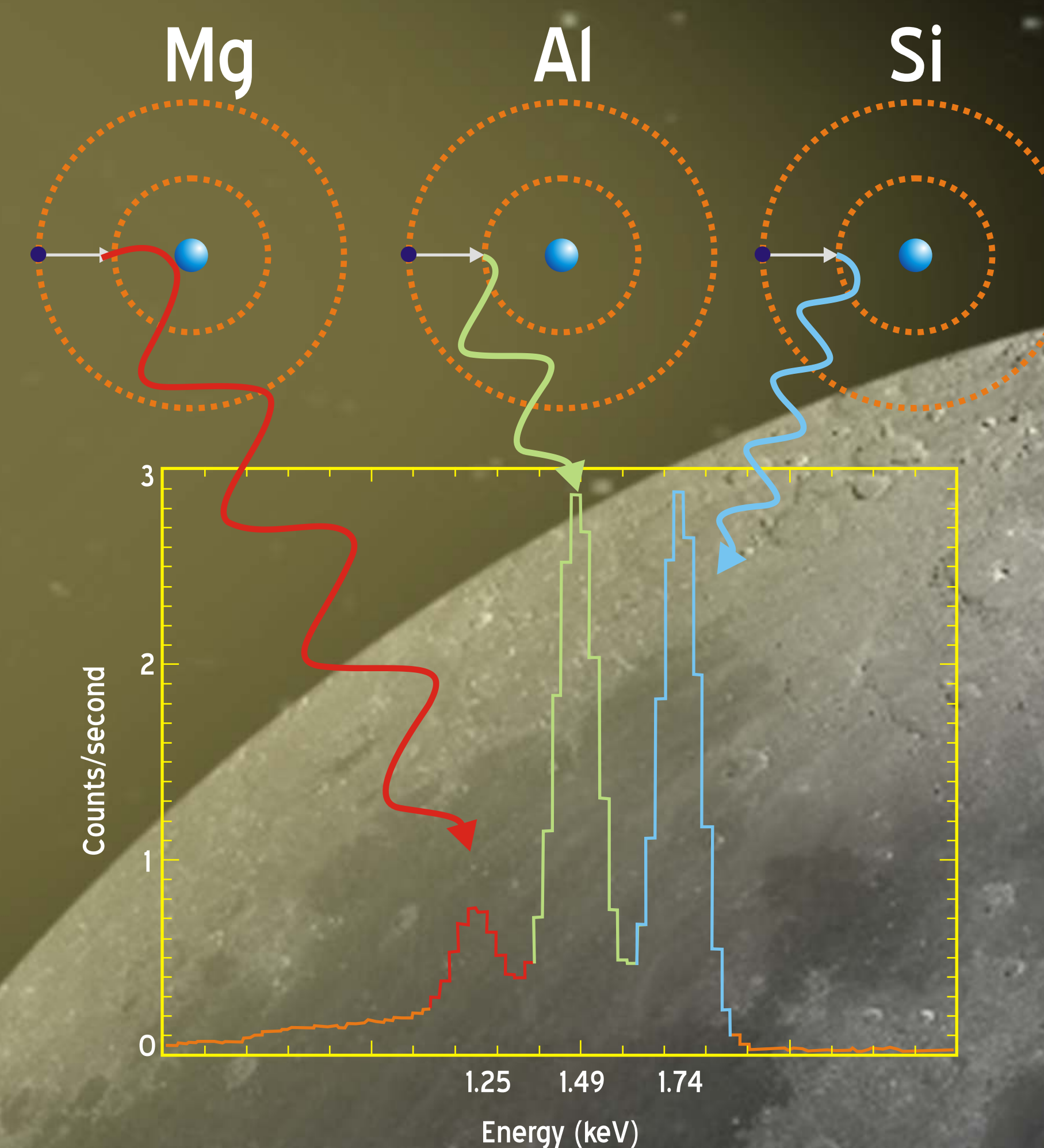
**Swept Charge Device**  
 X-ray photon generates a charge cloud which is transferred to the diagonal and then to the amplifier at the left hand corner for further processing.

**Science Objective**  
 Lunar mapping of Mg, Al, Si, Ca, Ti and Fe



Elemental ratios as a diagnostic to differentiate lunar lithologies (assumes 10% error)

X-rays from the Sun, ionizes the atom leaving a vacancy. This is quickly filled by an electron from a higher energy shell. This results in the emission of an X-ray photon of energy, characteristic to the atom (X-ray fluorescence).



SCD spectrum from ground calibration

