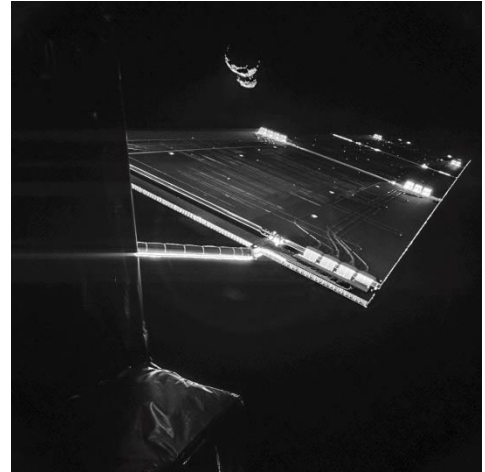


The Rosetta mission. A window into the early formation of the Solar System.

Stubbe Faurschou Hviid, DLR Institute for Planetary Research, Berlin

In 2004 ESA launched the Rosetta spacecraft on its mission to the comet 67P/Churyumov-Gerasimenko. After a 10 year cruise it arrived at the comet in 2014. Rosetta was designed to characterize the variability of the morphology, composition and chemistry of the comet nucleus as it changes throughout one full comet orbit starting with a completely inactive comet through the solar perihelion passage and back to inactive comet again.



~4.6 billion years ago our Solar System formed out of a collapsing molecular cloud. Due to conservation of angular momentum, an accretion disc formed in whose center the Sun accreted. Dust and ice particles in the disc agglomerated to planetesimals and cometesimals. The planetesimals are the building blocks of the planets. In the outer parts of the solar nebula the temperatures were cold enough that volatiles condensed before larger bodies were formed. Comet are built from material dominated by pebbles/cometesimals accreted in the outer part of the prototary disk. Comets are therefore expected to provide a window into the composition and morphology of the material existing during the early formation of the solar system.

This talk will discuss what has been learned from the Rosetta mission about the origin and evolution of comets. And how this can help constrain the origin of the Solar System