



**Ronald E. Hatcher**  
**Science on Saturday Lecture Series**  
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**Planetary Science at the Coldest Place on Earth:  
the Antarctic Search for Meteorites**

**Dr. Juliane Gross**  
**NASA Early Career Fellow**  
**Associate Professor**  
**Dept. of Earth and Planetary Sciences**  
**Rutgers University**

**ABSTRACT:**

**Meteorites are our window into the early Solar System and planetary formation processes. By studying these extraordinary space rocks, we can learn about the origin, the composition, the early processes, and the age of the Solar System; we can learn about the distribution of volatile elements (for example water), and organic material that could have led to life on Earth. In addition, we can learn about the processes of planetary formation and the early history of planetary bodies, including Earth. We can learn about the different rocks types on these planetary bodies, about water or organic material on other planets. Meteorites are essentially archives of early planetary evolution and by learning how to read these archives we can extract all the information about planet-forming and planet-altering processes that have shaped our little corner of the universe.**

**But where do we find meteorites? Meteorites can be found in deserts, where they are being protected from weathering. Antarctica is a cold desert and once a meteorite falls in Antarctica is will get frozen into the ice and thus kept in its pristine form. The ice in Antarctica acts like a giant conveyor belt for meteorites and once a year NASA, in conjunction with Case Western University, sends a team of 8 people on a mission to the icy continent. For 2-3 months these 8 people will brave the cold and hardship to recover those meteorites, living in tiny tents with not a single living organism around. This presentation will be about the journey to the icy continent, the beauty and the beasts of Antarctica, the daily struggles of life on the ice plateau, the hardships, and the most wonderous joys of finding meteorites.**



## **BIOGRAPHY:**

**Juliane Gross is an Associate Professor at Rutgers University, a NASA Early Career Fellow, and a research associate at the American Museum of Natural History (AMNH) in New York City. Juliane is from Germany where she received her Ph.D. with distinction in 2009 in experimental petrology at the Ruhr-University Bochum, Germany. She then moved to the USA and spent 2.5 years at the Lunar and Planetary Institute and NASA JSC in Houston, TX, as a Postdoc Research Fellow. From there she moved to the East Coast where she became a Research Scientist at the AMNH for 3 years, before taking up the position of a professor for planetary sciences at Rutgers University in 2015. In 2017 Juliane was named as the “*Chancellor’s scholar*” at Rutgers University, in the same year she was also selected as one of 8 members to go to Antarctica and recover meteorites for NASA’s ANSMET mission.**

**Juliane’s research focuses on investigating the formation and evolution of differentiated planetary bodies, especially the Moon and Mars through planetary samples. Meteorites (and returned samples, e.g., Apollo samples) provide a window into surface lithologies and the interior of planetary bodies. Juliane uses detailed mineralogy, petrology, and geochemistry of these planetary samples through micro-analytical and experimental techniques to learn about crustal and mantle evolution of planetary parent bodies and processes that have shaped the evolution of the early Solar System.**