

## Einladung zum Science Meeting

**Zeit:** Donnerstag, 12.05.2022 09:00 Uhr

**Ort:** Webinar via Zoom:

<https://zoom.us/j/93830246101?pwd=MjRpWWdoRHRVc2V4OW56emdFRjNjdz09>

Meeting-ID: 938 3024 6101

Kenncode: 3R^Luk

### Steven Goderis

AMGC Vrije Universiteit Brussel

#### **Extraterrestrial dust from Antarctica: extending the inventory of Solar System materials arriving to the Earth over time using novel analytical instrumentation**

For over 10 years, the AMGC research team has been collecting extraterrestrial dust particles from sedimentary traps close to the mountain summits of the Sør Rondane Mountains in East Antarctica. These traps host a wide variety of particles with an extraterrestrial (ET) origin (including fully melted cosmic spherules, unmelted micrometeorites, impact spherules, and airburst debris), sampling the flux of ET material to the Earth over time. Due to the abundance and size of the extracted particles (typically less than 500  $\mu\text{m}$ ), traditional analytical protocols need to be optimized, as otherwise they could not be applied to these particles. Here, I aim to present an overview of the state-of-the-art analytical tools that has in recent years been applied to these microscopic particles, including synchrotron-based XRF and XAS, microCT, (Nano)SIMS, SHRIMP-SI, LA-(MC-)ICP-MS, TIMS, and LA-ICP-TOF-MS. By combining various chemical and isotopic proxies, the Sør Rondane Mountains micrometeorite collection has been used to refine the composition of the ET materials reaching the inner Solar System over the last few million years. Through this unique collection and state-of-the-art instrumentation, variations in the cosmic dust flux can be traced through time, while the break-up histories of asteroids (and possibly comets) in their source regions can be deduced.

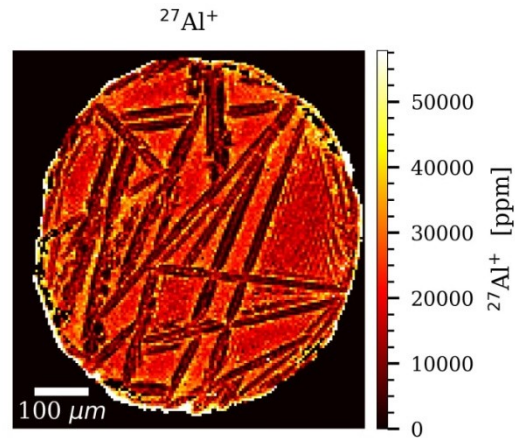


Image: Distribution of Al in a barred olivine cosmic spherule based on LA-ICP-TOF-MS.