

Session of [Focus Materialchemie](#) – Wednesday, **25.10.2023** 16:00 @ [HS Internationalen Wiener Motorensymposiums](#) (TU-Wien, Getreidemarkt 9/BD/2.OG ) – [join us](#) on ZOOM (ID: 983 0066 2349)

## **New insights on high altitude aerosols from single particle measurements**

[Daniel J. Cziczo](#), Maya Abou-Ghanem, John Dykema, Karl D. Froyd, Justin Jacquot, Frank Keutsch, Michael J. Lawler, Yaowei Li Gregory P. Schill, Xiaoli Shen, Daniel M. Murphy

*Department of Earth, Atmospheric, and Planetary Sciences at the Purdue University, Indiana, USA*

The composition of particles found in the upper tropospheric / lower stratospheric (UTLS) has now been studied in situ and in real time for a quarter century. First deployed in 1998, NOAA's Particle Analysis by Laser Mass Spectrometry (PALMS) instrument showed the complex internal and external mixing state of aerosols in this region of the atmosphere. Developed jointly by NOAA and Purdue, the PALMS-Next Generation (-NG) instrument was deployed in 2021 and 2022 on the NASA ER-2 aircraft for the Dynamics and Chemistry of the Summer Stratosphere (DCOTSS) study. DCOTSS specifically targeted summer convection and stratospheric overshooting over the continental United States while also allowing a general survey of this region of the atmosphere. The expanded capabilities of PALMS-NG allowed us to better understand the sources and mixing state of UTLS particles with an emphasis on the understudied regions impacted by deep convection. Among our findings are the transport of particles across the tropopause and their interaction with material already in the lower stratosphere.