

Johannes M. Meusburger

Erwin Schrödinger Fellow

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EDUCATIONAL BACKGROUND

- 03/2019 – 05/2023 Doctor of Philosophy (PhD) at the *University of Exeter / ISIS Neutron and Muon Source / Diamond Light Source, UK*
Thesis: “*Computational and experimental studies of selected magnesium and ferrous sulfate hydrates: implications for the characterisation of extreme and extraterrestrial environments*”
Advisors: Karen Hudson-Edwards, Dominic Fortes, Chiu Tang, Rich Crane, Joseph Hriljac
- 10/2016 – 12/2018 Master of Science (MSc) in Earth Science (Mineralogy and Geomaterials) at the *University of Vienna, Austria*
Thesis: “*High-Pressure Behavior and Structural Phase Transformations in $MgSO_4 \cdot H_2O$ and $FeSO_4 \cdot H_2O$* ”
Advisor: Ronald Miletich-Pawliczek
- 10/2013 – 09/2016 Bachelor of Science (BSc) in Earth Science at the *University of Vienna, Austria*
Thesis: “*High-Pressure Investigation of the Synthetic Orthopyroxene $LiInGe_2O_6$ (in German)*”
Advisor: Ronald Miletich-Pawliczek

ACADEMIC POSITION

- 08/2023 – 08/2025 NASA Postdoctoral Program Fellow at the NASA Ames Research Center, Exobiology Branch
Project: “*Detectability of magnesium sulfate hydrates by Curiosity and Perseverance*”
Advisor: Tom Bristow
- 02/2026 – 08/2027 Erwin Schroedinger Fellow at the University of Cambridge and University of Innsbruck
Project: “*Structure of $MgSO_4$ hydrates on Mars and Icy moons*”
Advisor: Chris Pickard

PROFESSIONAL AFFILIATIONS AND COMMUNITY SERVICE

- Since 09/2017 Member of the *Mineralogical Society of Austria*
- Since 2018 Outreach activities at schools, expert interviews with high-school students
- Since 11/2023 Science team member on the *Curiosity* Mars rover
- Since 2024 Peer review for various scientific journals
- 2025 Research grant review for NASA HQ
- 2025 Invited textbook review for *Icarus (Elsevier)*

SELECTED CONFERENCE AND SEMINAR TALKS

- 05/2025 ‘*Burial-driven formation of magnesium sulfates at Gale crater, Mars*’, Exobiology Branch Seminar, NASA Ames Research Center; Moffet Field, USA
- 04/2025 ‘*Origins of Mg-sulfates*’, Mars Science Laboratory Curiosity Rover Science Team meeting, online, USA

02/2024	<i>“In situ identification and interpretation of magnesium sulfate hydrates at Gale crater Mars”</i> ; Exobiology Branch Seminar, NASA Ames Research Center; Moffet Field, USA
11/2023	<i>“Magnesium sulfate hydrates at Gale crater, Mars”</i> , Mars rover CheMin Instrument team Meeting; online, USA
02/2022	<i>“Sulfate Minerals on Mars”</i> ; ISIS Crystallography Group Science Day; Abingdon, UK
02/2021	<i>“Characterisation of Sulfate Minerals in Extreme Environments”</i> ; Camborne School of Mines Seminar; University of Exeter, UK
02/2020	<i>“High-pressure crystallography and structural phase transitions in orthopyroxene-type and kieserite-type compounds”</i> ; Diamond-ISIS Crystallography Student Day; Harwell Campus, UK
06/2018	<i>“High-pressure behavior and structural phase transformations in $MgSO_4 \cdot H_2O$ and $FeSO_4 \cdot H_2O$”</i> ; Topics in Mineralogy Seminar Series; Vienna, Austria
09/2017	<i>“High-pressure compression behavior of orthorhombic $LiScGe_2O_6$”</i> ; Conference talk MinPet 2017; Innsbruck, Austria

SKILLS

Synthesis	Hydrothermal, controlled dehydration (humidity, pressure, temperature), deuteration
Analytics	X-ray and neutron diffraction (single crystal and powder) Vibrational spectroscopy (Raman and Infrared) High-pressure and ultra low-temperature studies (diffraction and spectroscopy)
Computational Modelling	Density Functional Theory prediction of structural, vibrational and elastic properties
Languages	German (fluent, native speaker), English (fluent)

SUCCESSFUL RESEARCH PROPOSALS AT NATIONAL FACILITIES

2025	Stanford Synchrotron Facility	Analyst: <i>Synchrotron Powder XRD characterisation of mixed cation sulfate minerals.</i>
2024	NASA Pleiades supercomputer	PI: Project renewal; 300 000 CPU hours
2024	Stanford Synchrotron Facility	Analyst: <i>Synchrotron Powder XRD characterisation of natural and synthetic perchlorate phases.</i>
2023	NASA Pleiades supercomputer	PI: Detectability Of Magnesium Sulfate Hydrates By Curiosity And Perseverance; 300 000 CPU hours
2022	ISIS Neutron and Muon Source	Experimenter: <i>High-Pressure behaviour of $CuSO_4 \cdot 5H_2O$, 7 days of beamtime at HRPD instrument</i>
2020	Diamond Light Source	Co-I: <i>Unravelling the nature of the polyhydrated sulfate deposits on Mars, 3 days of beamtime at I11</i>
2020	ISIS Neutron and Muon Source	Co-I: <i>Unravelling the nature of the polyhydrated sulfate deposits on Mars, 4 days of beamtime at HRPD</i>

- 2018 European Synchrotron Radiation Facility **Experimenter:** *Thermal diffuse scattering of SrTiO_3 , 7 days of beamtime at ID27*
- 2017 European Synchrotron Radiation Facility **Experimenter:** High-pressure behaviour of various minerals in the megabar regime, 7 days of beamtime at ID11