

Astrochemistry in Planetary Science

Organizers: Andrew Mattioda, Katarina Yocum, and Akant Vats

August 25-27, 2026

Tuesday PM

Cold Solar System Objects

McCormick Place Convention Center W184a

S. El-Shall, O. Ward, *Presiding*

2:30 PM. Introductory Remarks.

2:35 PM. Tracing volatile inheritance and evolution in the outer solar system with JWST.

S. Protopapa

3:05 PM. Carbon isotope fractionation of CH₃OH in Comet 12P/Pons-Brooks. **K. Foster**, M. Cordiner, N. Roth, A. Remijan, N. Biver, D. Bockelée-Morvan, J. Boissier, B. Bonev, S. Charnley, J. Crovisier, M. Drozdovskaya, K. Furuya, M. Jin, Y. Kuan, M. Lippi, D. Lis, S.N. Milam, C. Opitom, C. Qi, R. Simon

3:20 PM. From interstellar objects to sun-grazing comets: Chemical complexity observed in small bodies. **N. Roth**, N. Biver, D. Bockelée-Morvan, D. Bodewits, J. Boissier, S. Bromley, S. Charnley, M. Cordiner, J. Crovisier, M. Drozdovskaya, D. Farnocchia, K. Foster, K. Furuya, E. Gibb, D. Harker, M. Kelley, Y. Kuan, E. Lellouch, D. Lis, M. Micheli, S.N. Milam, R. Moreno, J. Noonan, C. Opitom, C. Qi, A. Remijan, P. Santos-Sanz, M. Schwamb, C. Thomas, G. Villanueva, C. Woodward, J. Bier, L. Hart

3:50 PM. Intermission.

4:30 PM. How chemical observations unveil hidden habitats on icy worlds. **P. Higgins**

5:00 PM. Experimental constraints on the phase behavior of Titan's surface liquids: From methane-ethane-nitrogen to trace hydrocarbons. **J. Hanley**, C. Thieberger, A. Engle, S. Tan, W. Grundy, J. Steckloff, G.E. Lindberg, O. O'Brien, S. Tegler

5:30 PM. Reactions of N(²D) with monocyclic and polycyclic aromatic hydrocarbons and their role in the atmospheric chemistry of Titan. **M. Rosi**, N. Balucani, P. Casavecchia, L. Mancini, D. Skouteris, G. Vanuzzo

5:45 PM. DFT-based interpretations of aromatic compounds in ice grain impact ionization mass spectra from icy ocean worlds. T.R. O'Sullivan, **P. Bera**, N. Khawaja, M. Napoleoni, B. Abel, F. Postberg

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Wednesday AM

Mars Chemistry

McCormick Place Convention Center W184a
C. Brown, O. Wilkins, *Presiding*

8:00 AM. Introductory Remarks.

8:05 AM. Tracing the history of water-rock interactions and potentially habitable conditions on Mars through chemical and mineralogical changes in rocks and soils at Gale and Jezero craters. **E. Hausrath**, M. and Engineering team, M. Engineering team

8:35 AM. Retrograde sulfate precipitation in the Martian crust. **J. Meusbürger**, T. Bristow, D. Vaniman, E. Rampe, R. Sheppard, S. Simpson, S. Chipera, D. Blake, A. Yen, A. Roberts, C. Seeger, J. Grotzinger, R. Hazen, V. Tu, T. Peretyazhko, G. Berlanga, A. Pandey, N. Castle, J. Clark, P. Craig, R. Downs, D. Des Marais, R. Gellert, S. Gupta, E. Hausrath, E. Hughes, M. Litvak, D. Ming, R. Morris, S. Morrison, P. Najeeb, S. Nikiforov, M. Thorpe, A. Treiman, B. Tutolo, A. Fraeman, A. Vasavada

9:05 AM. Field-deployed X-ray microanalysis for Mars: PIXL and PETRA. **M. Tice**, J. Hurowitz, B. Ganly, M.M. Jones, D.A. Klevang, S.J. VanBommel, C. Ntemkas, M. Kirkpatrick, J. Webster, B.P. Tee, S. Voss, L. Munday, M. Ferguson, J. Perkins

9:35 AM. Unveiling planetary habitability through volatile cycles: From spacecraft spectroscopy to chemical identifiability. **E.L. Scheller**

10:05 AM. Intermission.

10:30 AM. Deciphering the organic inventory of Mars: Challenges in detecting molecular biosignatures. **T. Fornaro**

11:00 AM. Interpreting organic carbon discovered on Mars through terrestrial analog field studies. **A. Williams**

11:30 AM. Developing a microbial Michelin guide to the solar system: Field analog metanalyses of geochemical ingredients as a life detection strategy. **C. Phillips-Lander**, B.J. Glass

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Wednesday PM

Lunar Exploration and Airless Bodies

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J. Sebree, A. Vats, *Presiding*

2:00 PM. Introductory Remarks.

2:05 PM. Geochemistry as a driver for lunar landing site selection: Apollo to now. **A. Fagan**

2:35 PM. Current understanding and knowledge gaps of lunar ices for in situ resource utilization. **D. Hurley**, B. Cohen, A. Deutsch, D.M. Porterfield, B. Denevi

3:05 PM. Glowing grains and icy poles: What thermally-stimulated luminescence can tell us about the Moon. **A. Sehlke**

3:35 PM. Emerging laboratory techniques to study returned lunar samples. **R. Ogliore**

4:05 PM. Intermission.

4:35 PM. Stable isotope analysis by Orbitrap-IRMS for Planetary Science applications. **G. Weiss**

5:05 PM. Organics and minerals in a grain from asteroid Ryugu: Infrared microscopy analysis. **M. Nuevo**, S.A. Sandford, D.V. Mifsud, K. Fleming, E. Kraka

5:20 PM. Infrared spectroscopy of carbon grains formed from nitrogen substituted polycyclic aromatic hydrocarbons precursors under astrophysical conditions: Implications for space return samples. **P. Sundararajan**, E. Sciamma-O'Brien, M. Nuevo, C. Ricketts, D.V. Mifsud, L. Jovanovic, A. Mattioda, F. Salama

5:35 PM. Flash talks/Networking.

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Thursday AM

Chemistry of Biosignatures

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K. M. Yocum, G. Galimova, *Presiding*

8:00 AM. Introductory Remarks.

8:05 AM. Chemical reactivity of organic molecules on planetary bodies: Implications for biosignatures. **J.M. Weber**, E.C. Czapinski, S. Velling, Y. Liu, B.L. Henderson, J. Castillo-Rogez, J. Scully, L.M. Barge, R. Hodyss

8:35 AM. Revealing correlations in organic heteroatomic diversity, structure, and abundance across IOM and SOM fractions from synthetic to natural and meteoritic samples. **D. Boulesteix**, S. Shkolyar, A. Buch, c. szopa, A. Steele

9:05 AM. Prebiotic chemistry in planetary environments. **Z. Todd**

9:20 AM. Photolysis rates of nitrate & nitrite in prebiotic environments. **N.A. Schuler**, E.A. Sabel, Z. Todd

9:35 AM. Interactions of lipid vesicles and UV light: Implications for prebiotic chemistry. **Y. Cruz Rivera**, M. Jusino Maldonado, J.H. Kantorowicz, Z. Todd

9:50 AM. Intermission.

10:15 AM. Frozen fingerprints: The cryopetrology and biogeochemistry of planetary analog ices. **J. Buffo**

10:45 AM. Photo-physical analysis of speleothems in astrobiological analog environments. **J. Sebree**

11:00 AM. Tolerance of spacecraft-associated *Acinetobacter* towards cleanroom cleaning agents. **R. Mogul**

11:30 AM. Refining chlorine-catalyzed CO oxidation cycle in the Venusian atmosphere: kinetic and spectroscopic studies of ClCO and ClC(O)O₂. **W. Chao**, B.N. Frandsen, R. Skog, G.H. Jones, M. Okumura, M.P. Sulbaek Andersen, C. Percival, F. Mills, Y. Yung, F. Winiberg

11:45 AM. Near-infrared spectroscopy of methyl halogens supporting biosignature detection on habitable worlds. **F. Winiberg**, C. Hagee, K. Sung, X. Zhang, T. Crawford, E. Schwieterman