

## **ZIQIN NI, PH. D. STUDENT (BIOGRAPHICAL SKETCH)**

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Graduate Assistant  
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### **EDUCATION**

- 2018 – present**      **University of Maryland, College Park, MD**  
*Doctorate of Philosophy candidate, Astrobiology and Geochemistry*
- 2014 – 2018**      **Franklin and Marshall College, Lancaster, PA**  
*Bachelor of Arts, Geoscience (completed May, 2018)*  
Marshall Fellow, Recipient of Rawnsley All Science Prize, the Geology Award, Richard A. Shephard'56 Petrology/Geochemistry Award, and Patton Geophysics Award.

### **BIOGRAPHY**

Ziqin (Grace) Ni is a Doctorate of Philosophy candidate in the Department of Geology at the University of Maryland College Park, and a member of Early Career Council at the Network for Life Detection. Grace is interested in the coevolution of planets and life, with a focus on differentiating biotic vs. abiotic synthesis of biomolecules. Her current research includes the development of innovative analytical technique to detect and characterize organic compounds, as well as evaluating the biogenicity of organics from chemical, isotopic, and physical perspectives.

### **RELEVANT RESEARCH**

#### ***Detection and Characterization of Biosignatures via Laser-Enabled Orbitrap Mass Spectrometry (Present)***

- Pioneered the simultaneous identification of biomarkers and elucidation of their structures via transient decay of signals within Orbitrap analyzer
- Simplified the characterization of sample heterogeneity via *kriging* interpolation methods.

#### ***Strategies of identifying simple organics via LA-Orbitrap, U of Maryland (Present)***

- Demonstrated the performance of commercial Orbitrap in detecting picomoles of organics mixtures (12 different amino acids + inorganic salts) via laser ablation.
- Identified macromolecules and carbon isotopes of a 2.4 billion years old stromatolite from Australia via commercial LA-ICP-MS.

#### ***Synthesis of Cyanide Ion (CN<sup>-</sup>) via Hypervelocity Impacts, U of Maryland (Present)***

- Simulated plasma fields of hypervelocity impact using Q-switch pulsed laser.
- Synthesized CN<sup>-</sup> from carbonate and nitrogen containing salts (ammonium vs. nitrate).

### **PUBLICATION**

Arevalo, R., Ni, Z., & Danell, R. M. (2019). Mass Spectrometry and Planetary Exploration: A Brief Review and Future Projection. *Journal of Mass Spectrometry*, 0–2.

Ni, Z., Arevalo, R., Piccoli, P., & Reno, B. L. (2020). A novel approach to identifying mantle-equilibrated zircon by using trace element chemistry. *Geochemistry, Geophysics, Geosystems*, 21, e2020GC009230.