

ASMS 2020 Reboot Workshop Report

Title: Ion Trap Mass Spectrometry : Latest Trends in Ion Traps For Exploring Space, Other Planets, and Earth

Date: Tuesday 6/3/2020

Presiders: Desmond A. Kaplan, Theresa Evans- Nguyen

Goals of Workshop – To cover a range of topics discussing ion traps and impact to exploration of space, planetary environments, and on earth. We wanted the panelist to speak to the following questions:

- 1) When developing technology are they adapting commercial technology or developing new technology and why choose one over the other?
- 2) What are the biggest technical challenges for instrument development for planetary and space missions?
- 3) How can spaceflight instruments benefit the human condition?
- 4) What drives the choice of analyzer for planetary and space missions?
- 5) What advice would you give to someone starting out in this field?

Talks:

- 1) Jose Jimenez – Aerosol MS for Atmospheric Science (Earth)
- 2) Theresa Evans-Nguyen - Ion traps for Aerosol MS – detection of very large species (Earth)
- 3) Rick Arevalo Jr. – Who? What? Now? Obirtrap for space (Moon, Europa)
- 4) Ryan Danell – Mars Organic Molecular Analyzer (Mars)
- 5) Andrej Grubisic – Dragonfly Mass Spectrometer (Titan)

Summary of discussions:

Each of the presenters went through their particular research and instrumentation development projects ongoing. When addressing the questions all of the authors shared their opinions. Common pieces of advice were planetary missions are long, but have little space for developing brand new technology and thus many are reworking or using commercial technology to solve problems. The largest things to overcome are size, weight, and power and these are also the largest drivers for instrument choice. When approaching the topic of how the science from their particular missions would effect the human condition the answered varied but had a common theme about understanding life on other planets so as to better understand our own. Advice they would give to people starting out in the field is to not develop what already exists but integrate existing components and only develop critical new pieces that really aim to solve the questions that are being asked in the research. We had a healthy Q&A session for each speaker which revolved most commonly around technical questions specific to the authors talk. We also put out a survey to ask if the group would be interested to make the topic of the workshop shift to more general instrument development workshop and the group by majority wants this to remain an ion trap interest group.