### **20-8. Using Electrostatic Principles to Separate Out Nutrients from ECLSS Wastewater Brines**

**NASA PI:** Michael D. Hogue, PhD (michael.d.hogue@nasa.gov)

**Team:** James R. Phillips (james.r.phillips.iii@nasa.gov), Jennifer G. Wilson (jennifer.g.wilson@nasa.gov), Jerry J. Wang (jerry.j.wang@nasa.gov), Griffin Lunn (griffin.m.lunn@nasa.gov), Lawrence Koss (lawrence.l.koss@nasa.gov), Bruce Link, PhD (bruce.m.link@nasa.gov), Sarah J. Snyder (LASSO)

This project will study the use electrostatics to perform electrostatic separation and recovery of Environmental Control and Life Support Systems (ECLSS) waste brines. Currently we have no way to perform nutrient recovery on ECLSS waste brines. This process can give us a competing way to separate sodium from potassium to allow tandem production of acids, bases, and plant fertilizers to run upstream operations and hydroponic systems respectively (when combined with electrodialysis). If we can recover valuable chemicals from brine, then this will decrease resupply from earth, which will allow tremendous (multiple kilograms a day up-mass reduction) cost savings. In addition, using electrostatics for regolith enrichment allow much reduced mining costs for metal production on celestial bodies and allow a smaller mining footprint.