Microscale Particulate Classifier (MiPaC)

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Objective:

- Microscale fabrication and demonstration of electrical mobility classifier for the determination of:
  - Particle size distribution (10 nanometers → 1 micron)
  - Excess charge state
  - Overall number density

Relevance/Applications:

- Human Exploration and Development of Space (HEDS); Characterization of particulates in planetary atmospheres:
  - Heat transfer affecting planetary climatology
  - Environmental impact on human presence (respiration)
  - Filtration and repulsion/removal of particulates affecting deployment of mechanical systems
- NASA/FAA/EPA/NIH interests in health issues from atmospheric-borne particulates (Pui: Lead for NASA Aeronautics Program)
- NASA/NIST fundamental research interests in combustion generated particulates → Direct application to fire safety
- Enormous commercial interest:
  - Clean room and industrial environment monitoring
  - CVD process control