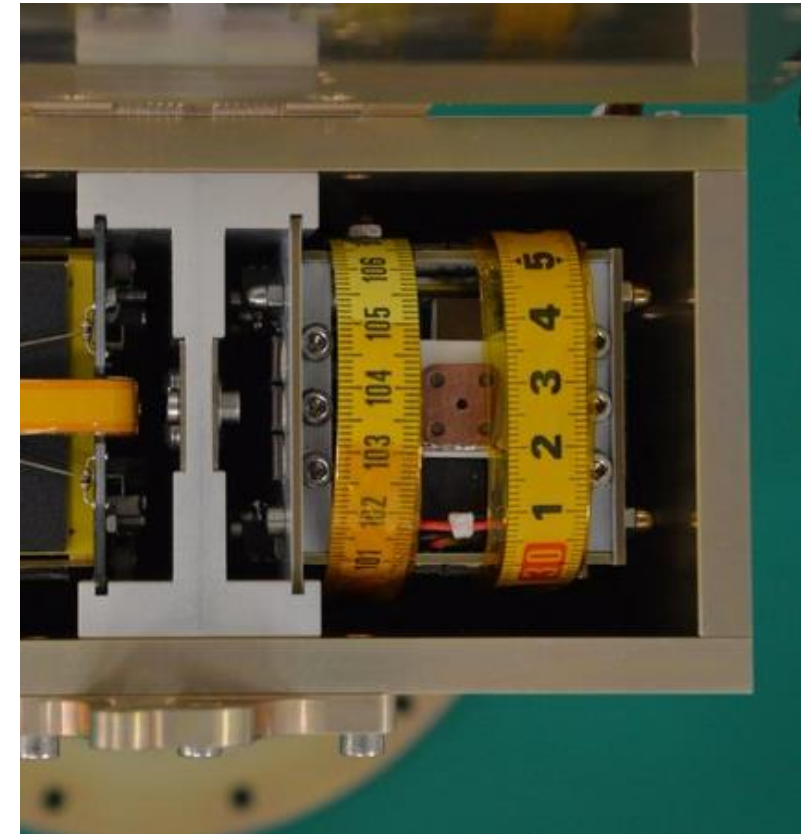
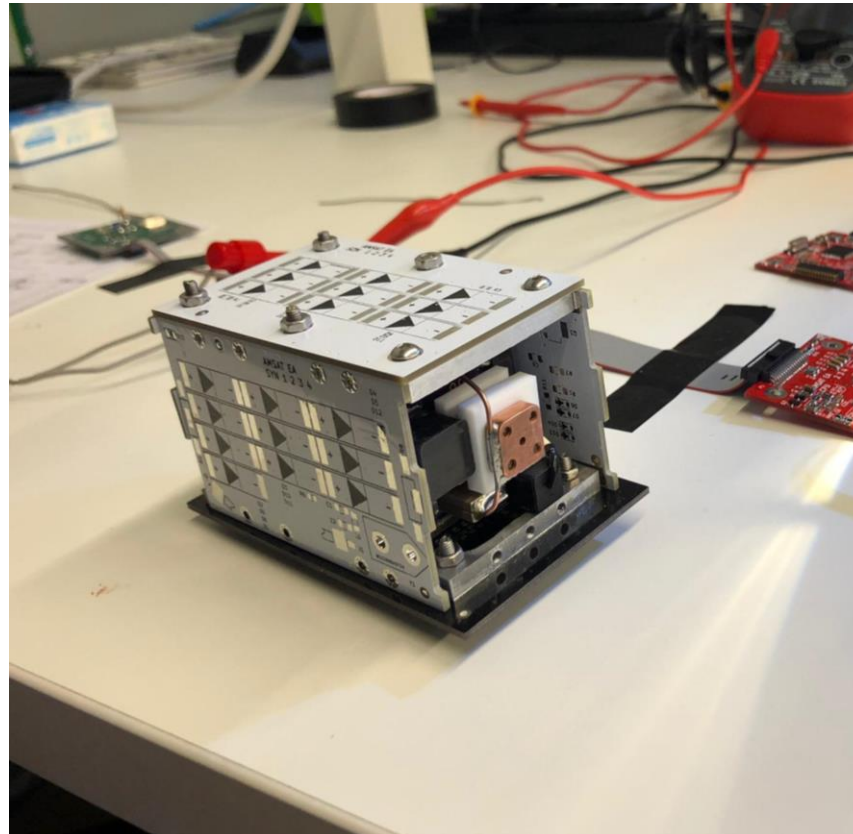
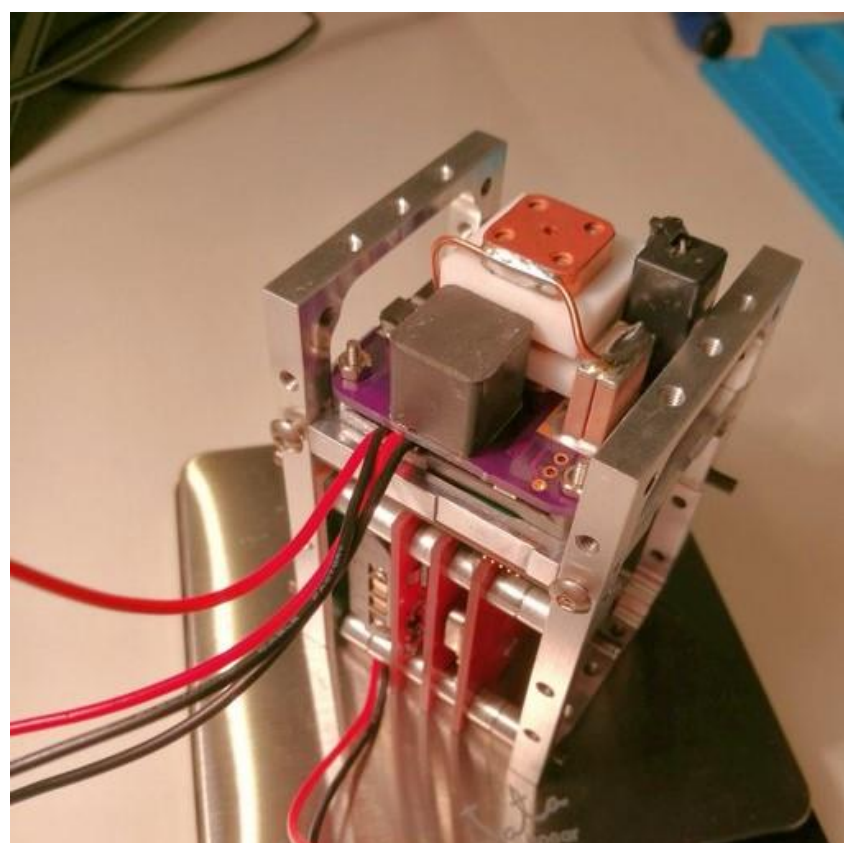


Progress and Developments in Open Source
Electric Propulsion at Applied Ion Systems

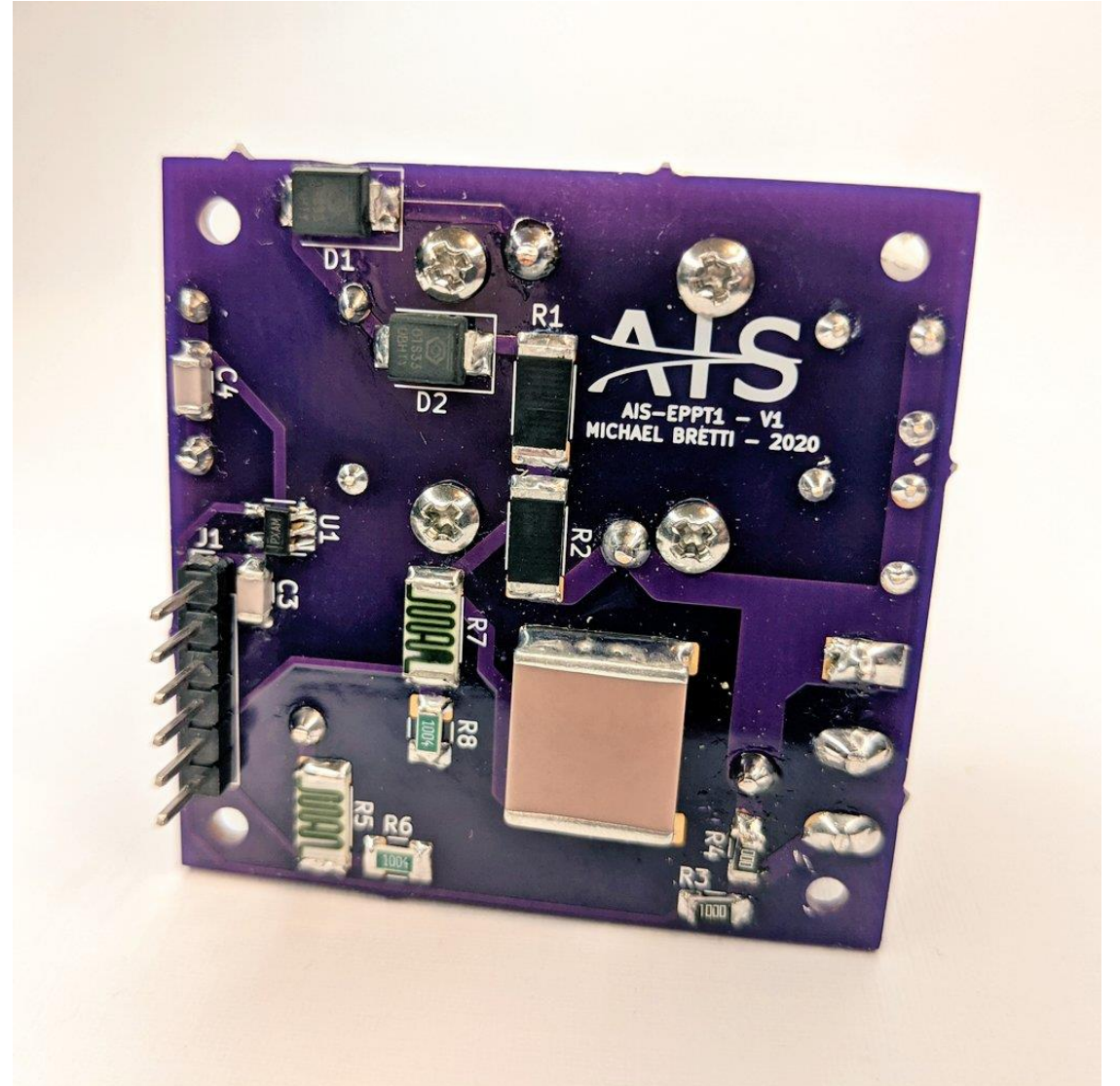
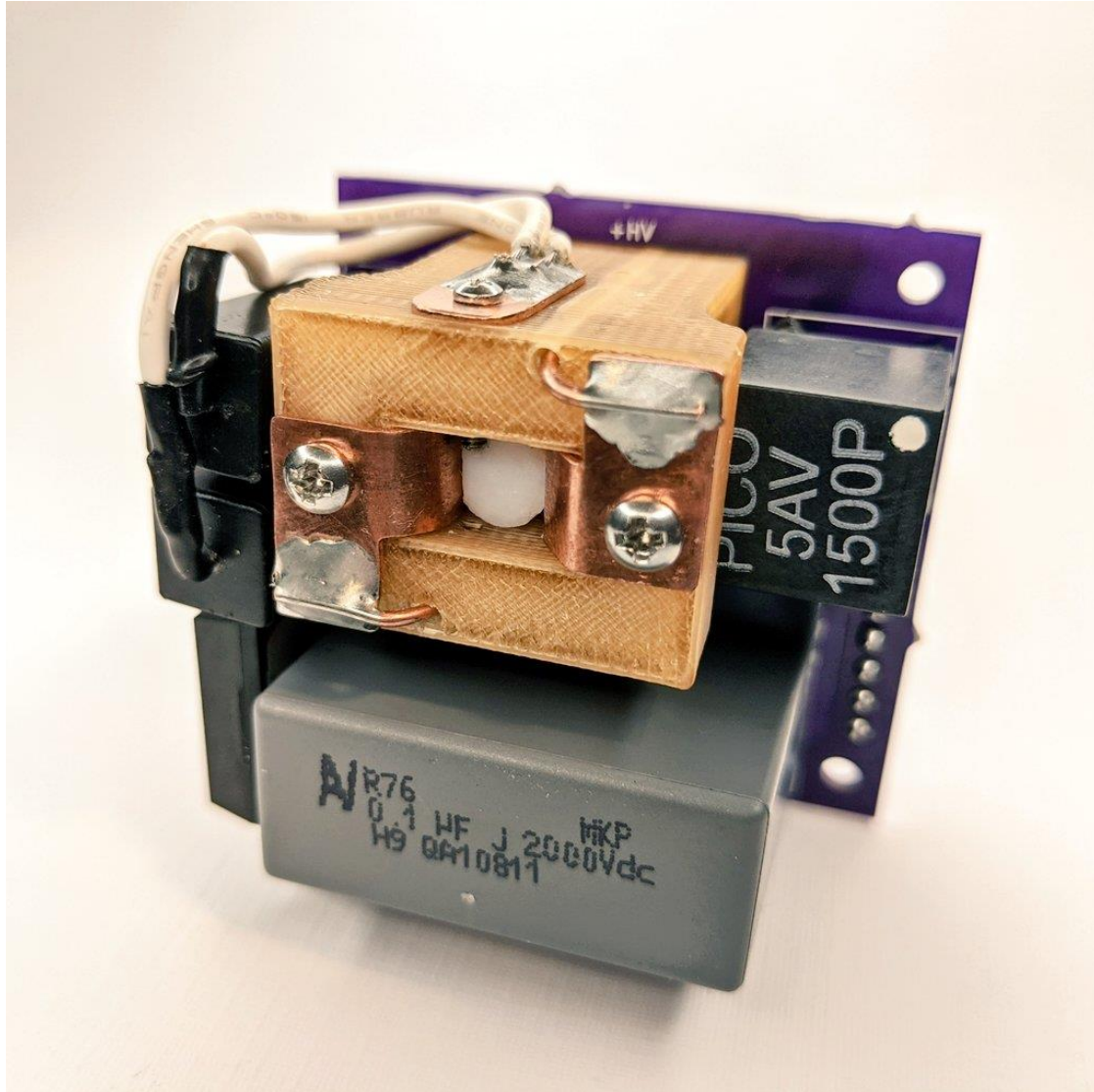
Michael Bretti

AMSAT-Spain GENESIS Integration Update

- Successfully integrated into the GENESIS N and L PocketQubes
- Successfully passed TVAC and vibration
- Loaded into the PICOBUS deployer, awaiting launch potentially this December

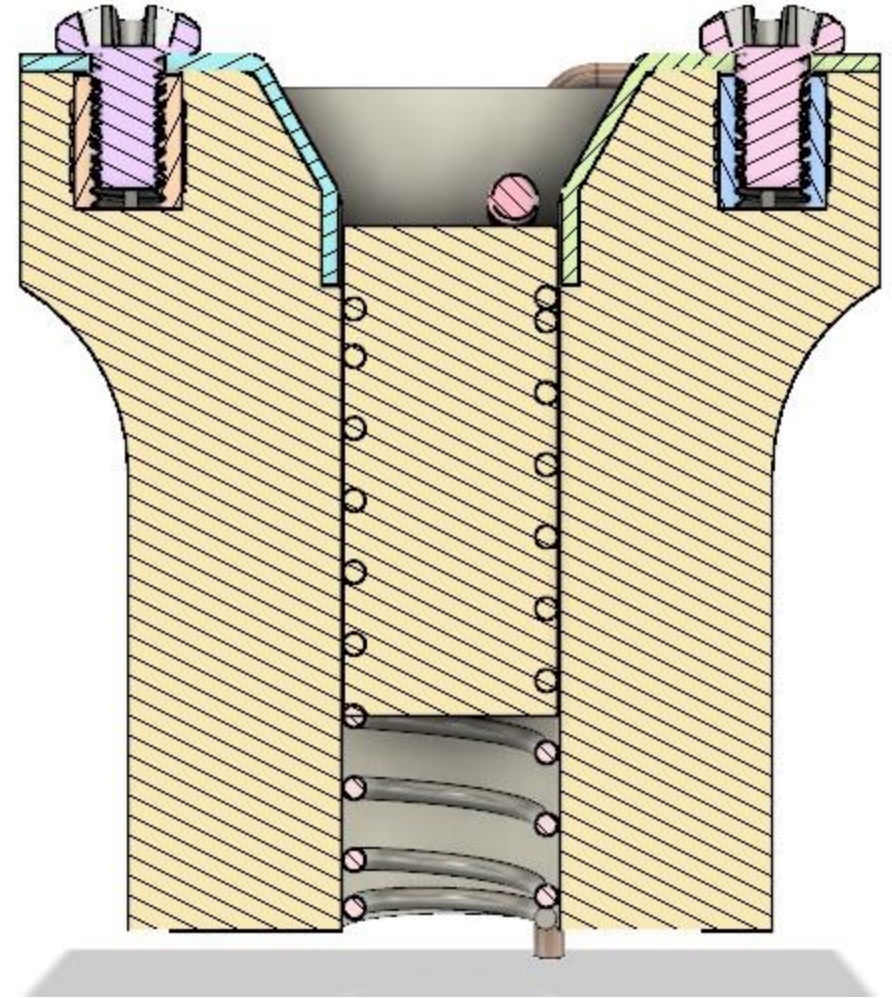


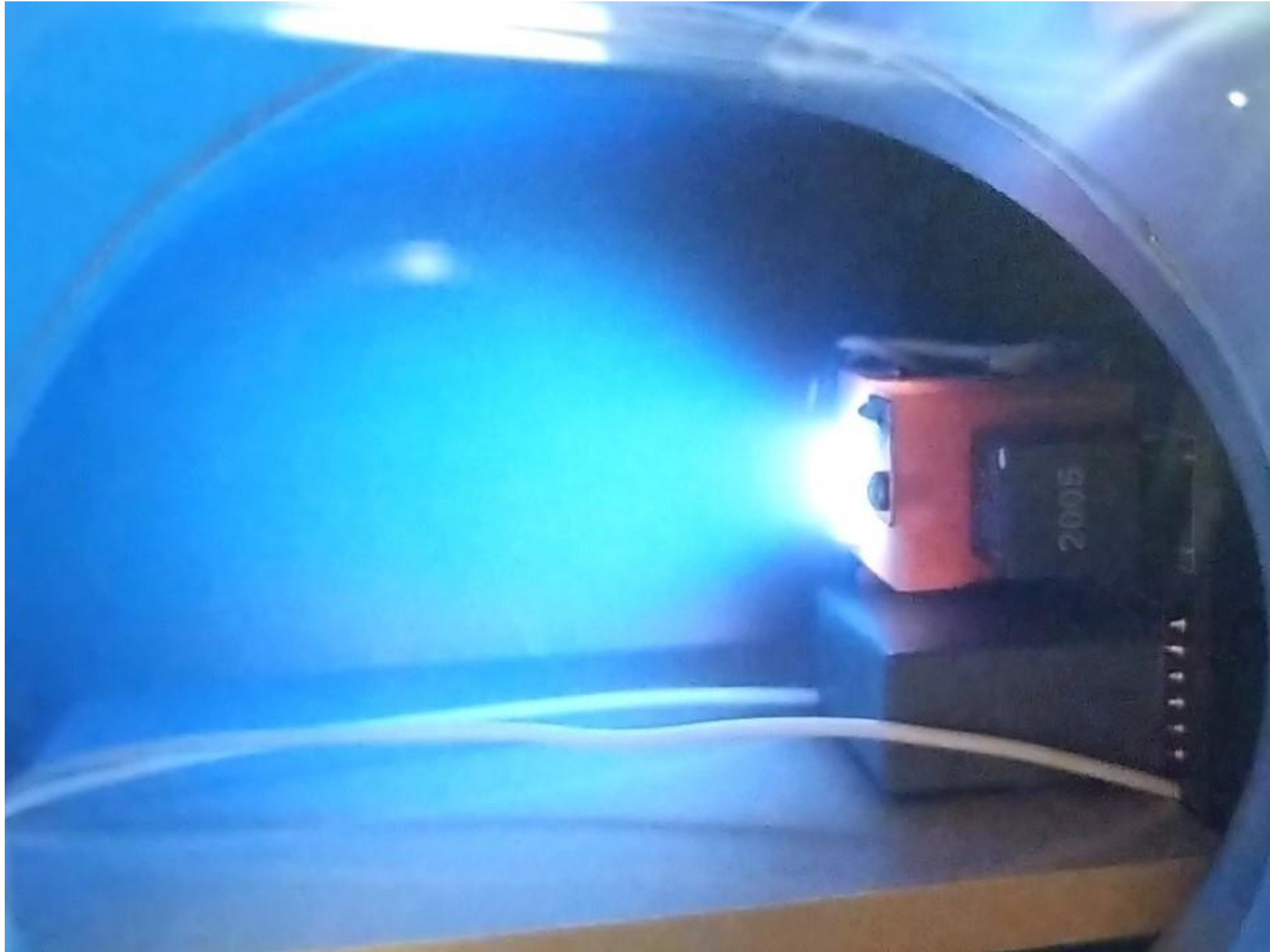
AIS-EPPT1 Micro Pulsed Plasma Thruster



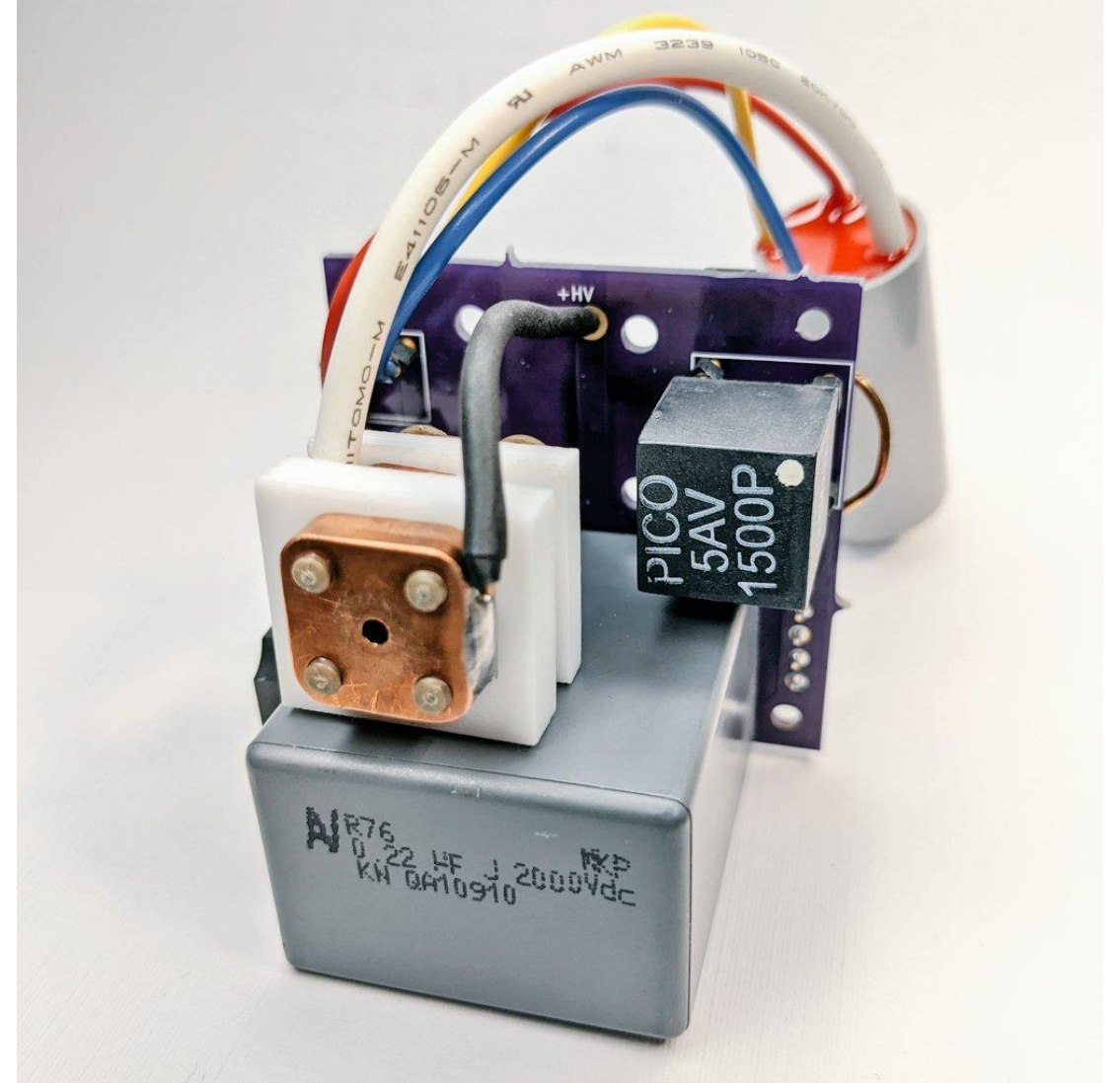
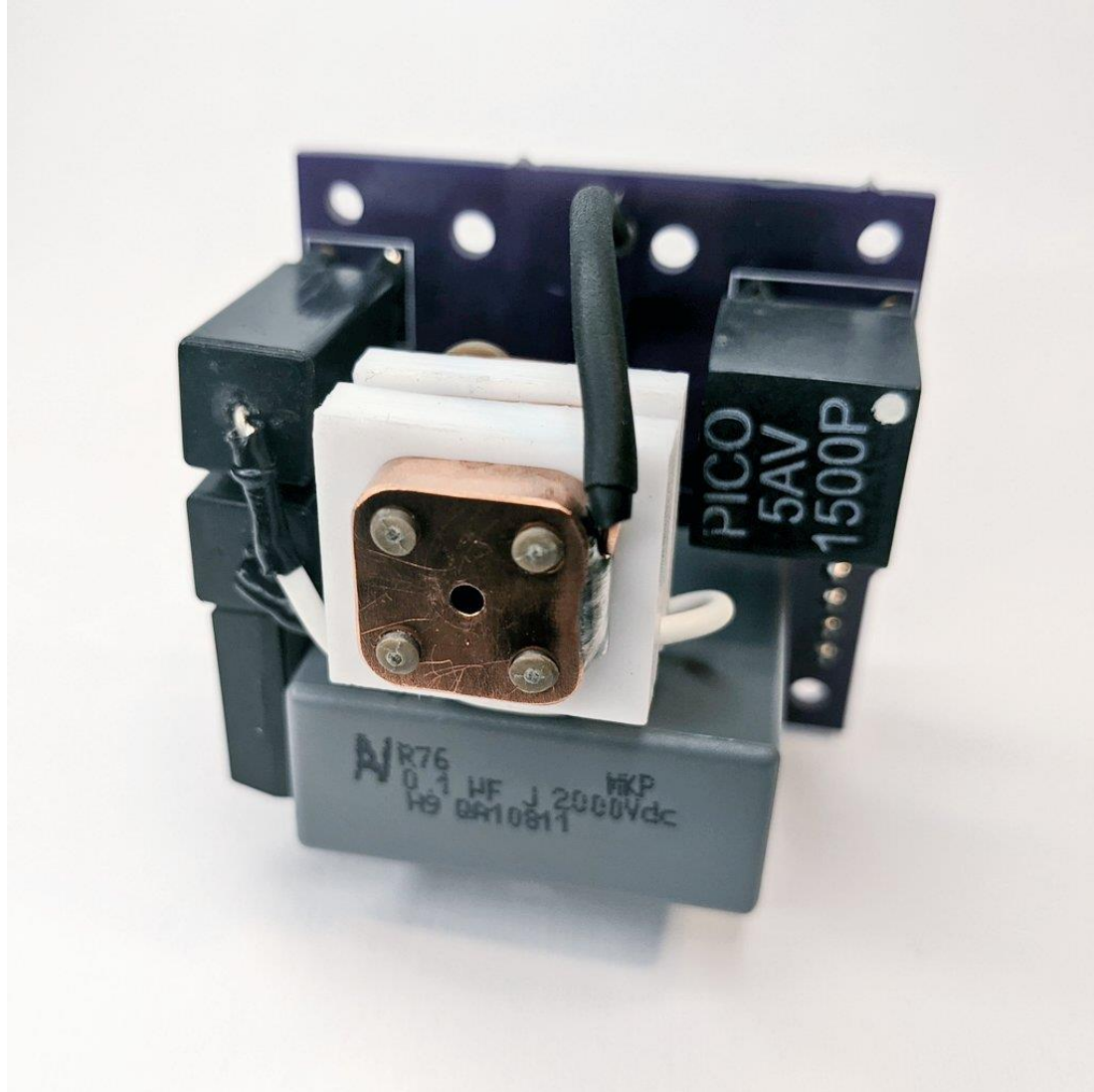
Improved Features of the AIS-EPPT1

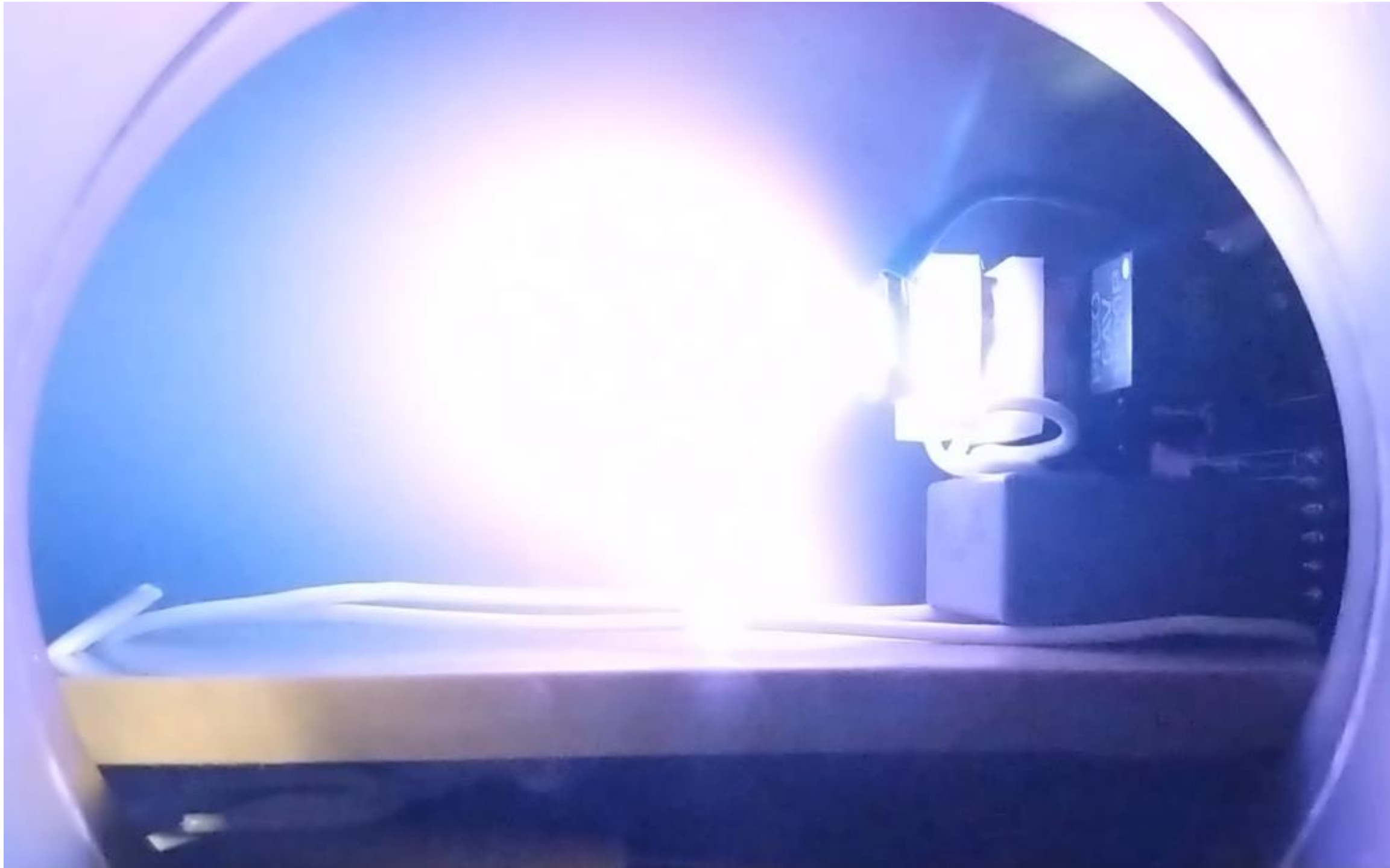
- Spring fed fuel
- Higher power/more efficient HV supply
- More robust main bank capacitor
- Dual ignition transformers
- Improved thyristor
- 3D printed housing
- Built-in modularity
 - Expandable housing for fuel capacity
 - Multiple standard film pulse cap compatibility
- Lower cost, modular, higher thrust, higher ISP, longer lifetime



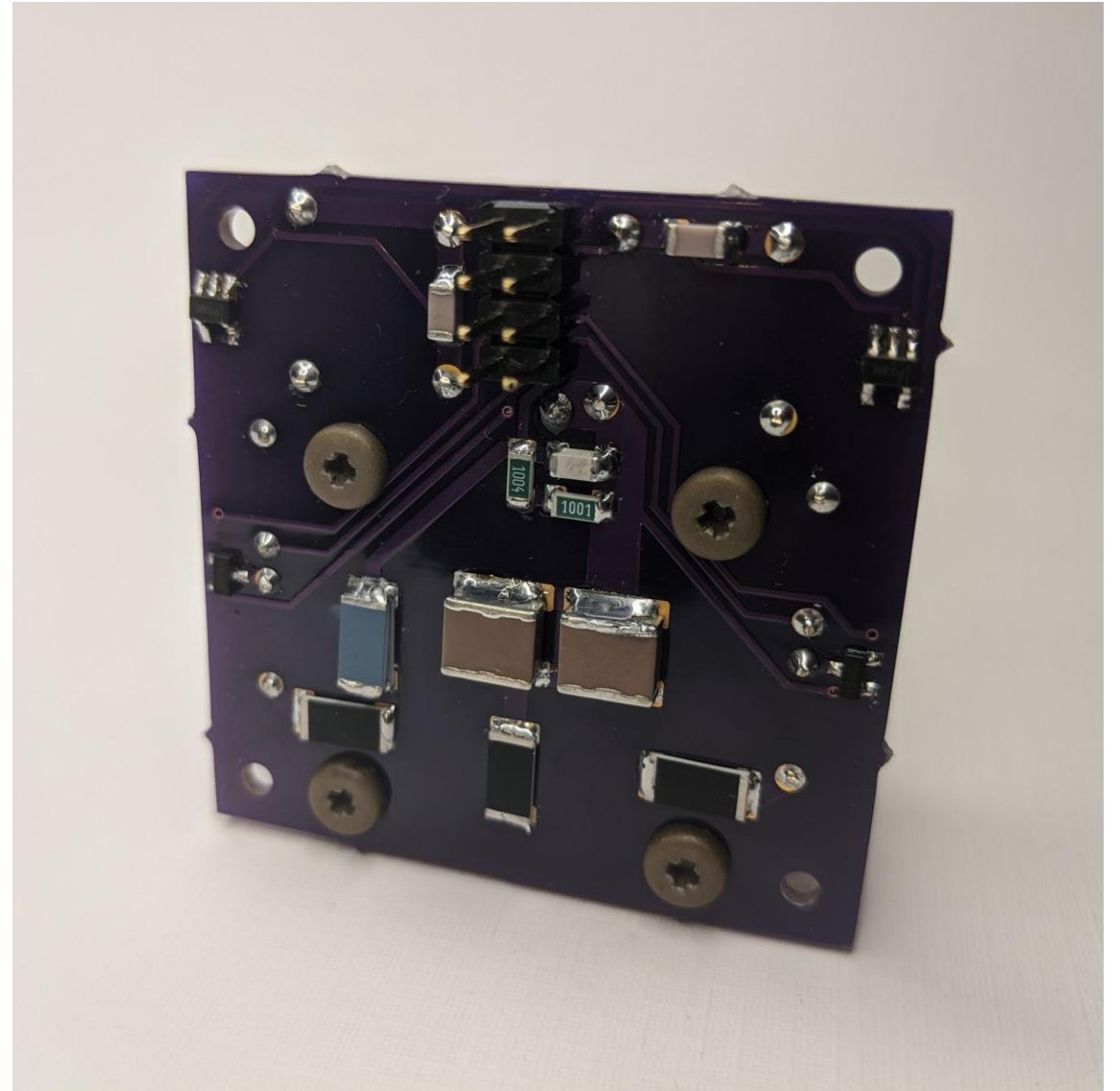
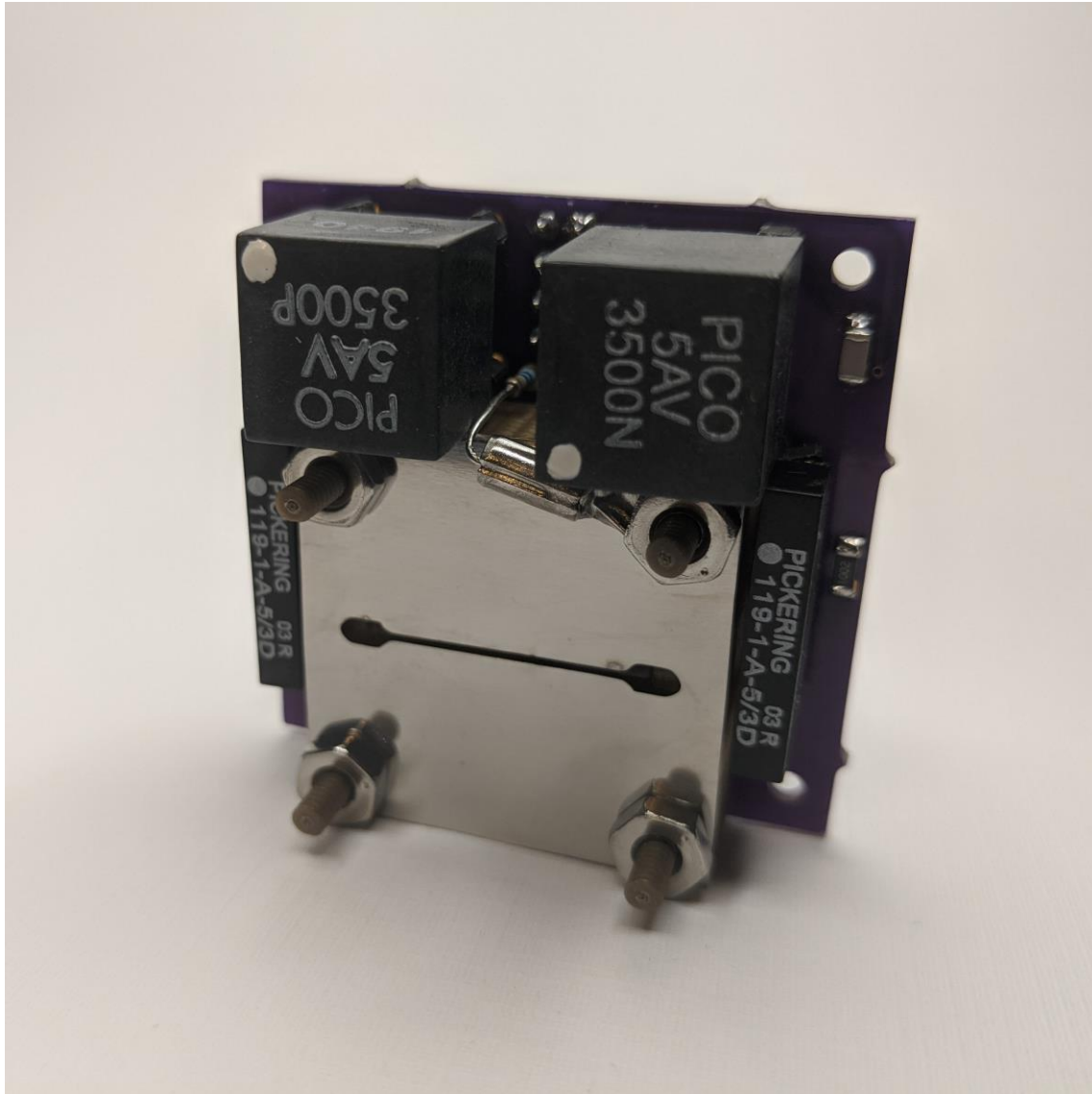


AIS-gPPT3/EPPT1 Hybrid Micro Pulsed Plasma Thruster



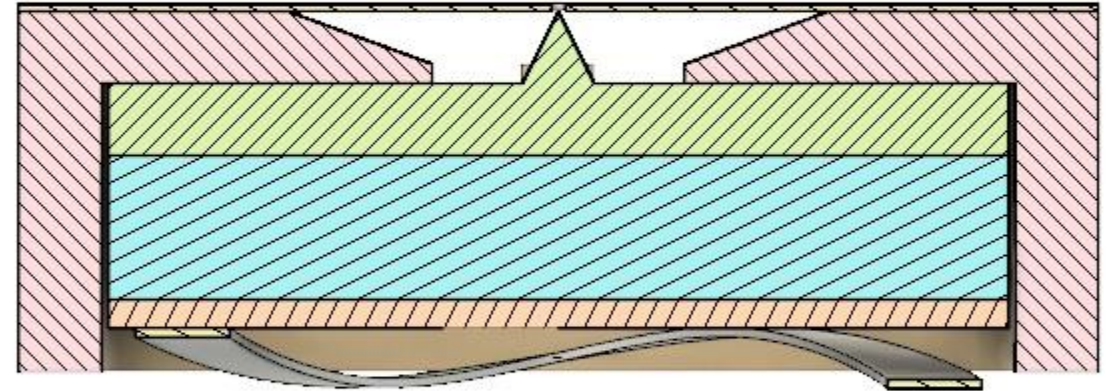


AIS-ILIS1 Ionic Liquid Electrospray Thruster

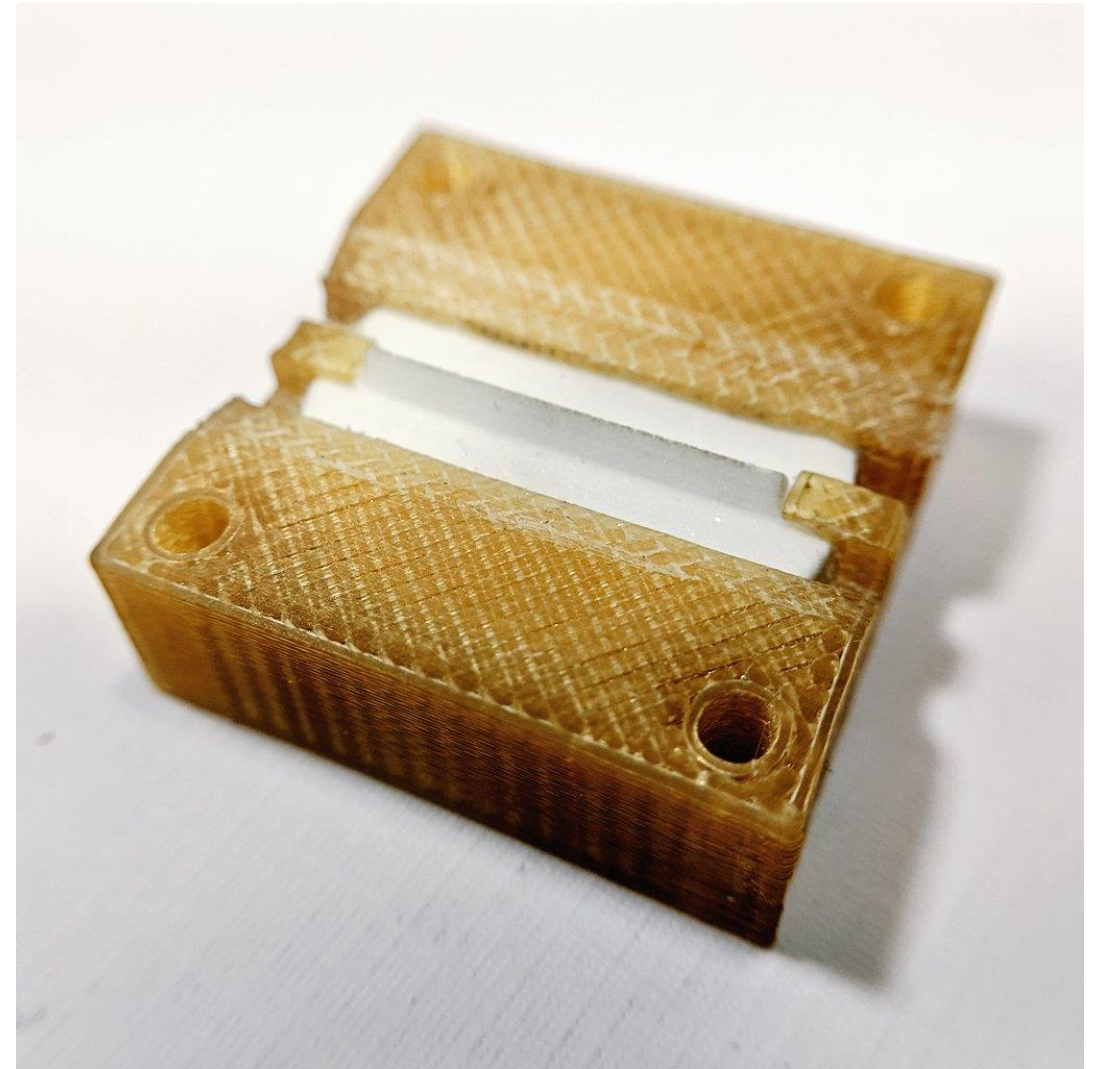


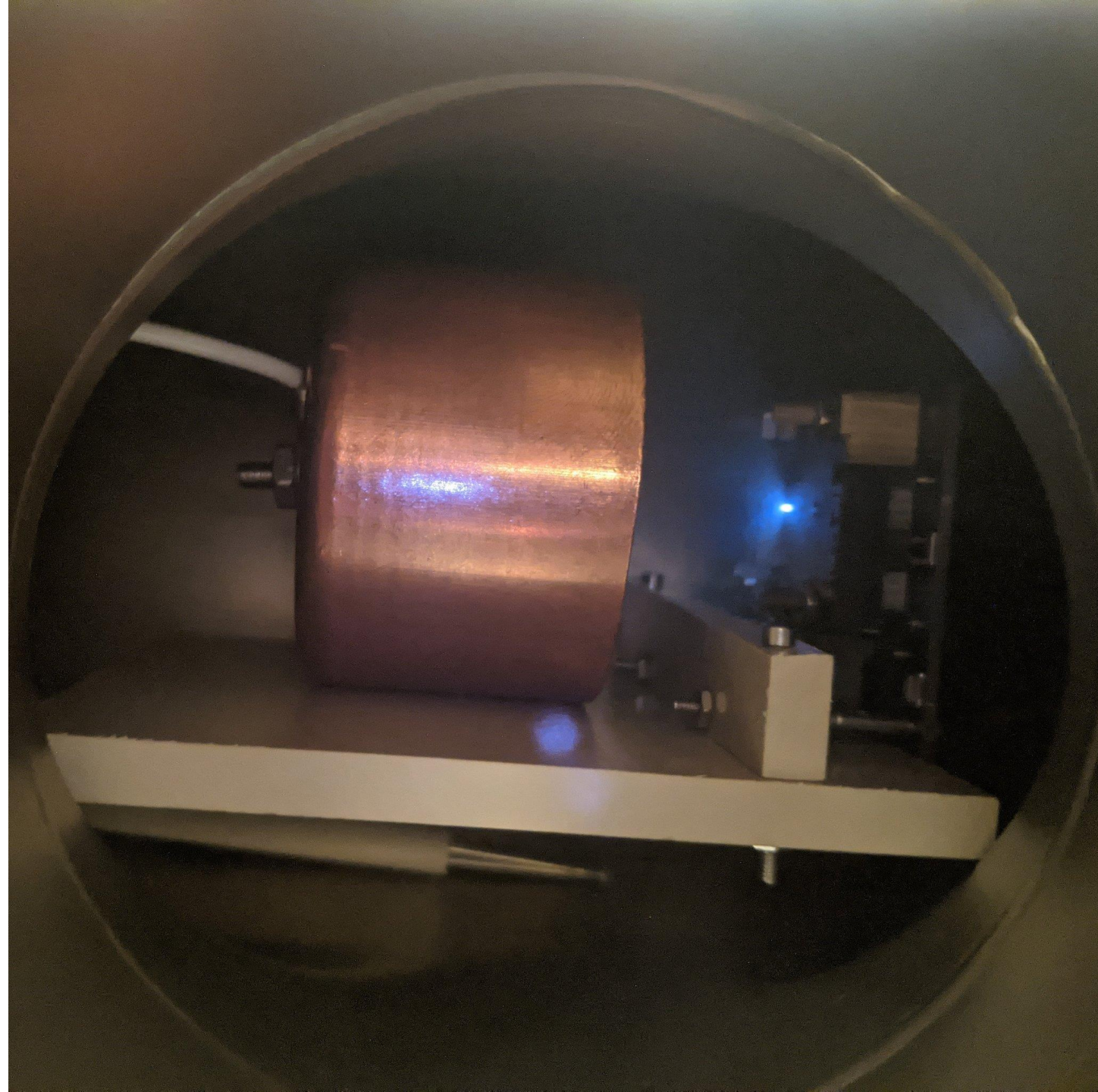
Specifications (Currently Tested V7 Prototype)

- **Size:** 45x45x16mm
- **Dry Mass:** 39g
- **Fuel:** EMI-BF₄
- **Fuel Capacity:** 1g
- **Emitter:** CNC Machined Glass Ridge
- **Peak Thrust:** 3 μ N
- **ISP:** 4500-4600s
- **V_{in}:** 5V
- **Power:** <0.1W
- **Accl. Voltage:** up to 5.8kV

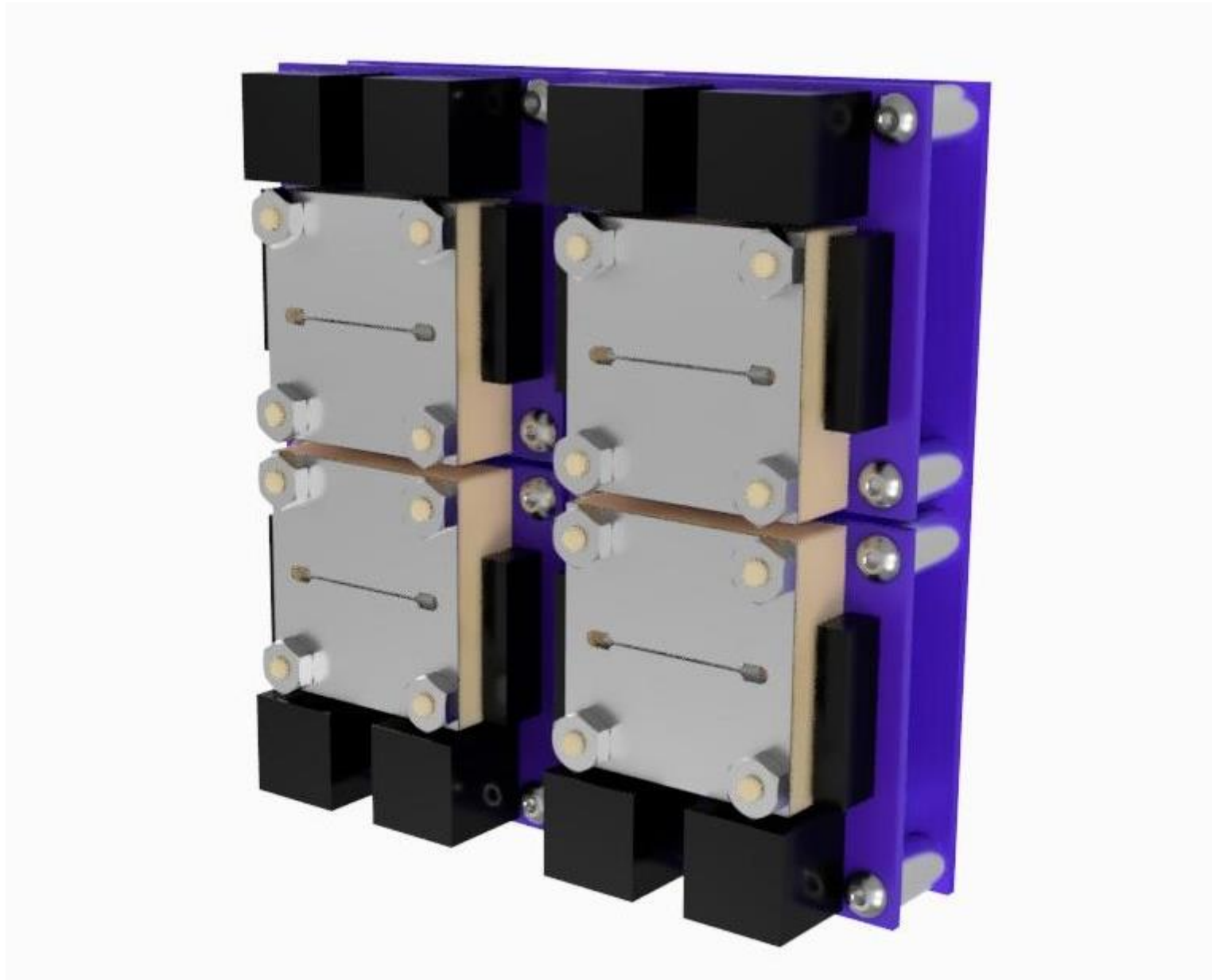


CNC Machined Porous Glass Ridge Emitter





Versatility of Electrospray Scaling – Module Clustering for Cubesats



Pushing the Boundaries of PQ Ion Thruster Performance

The AIS-ILIS2

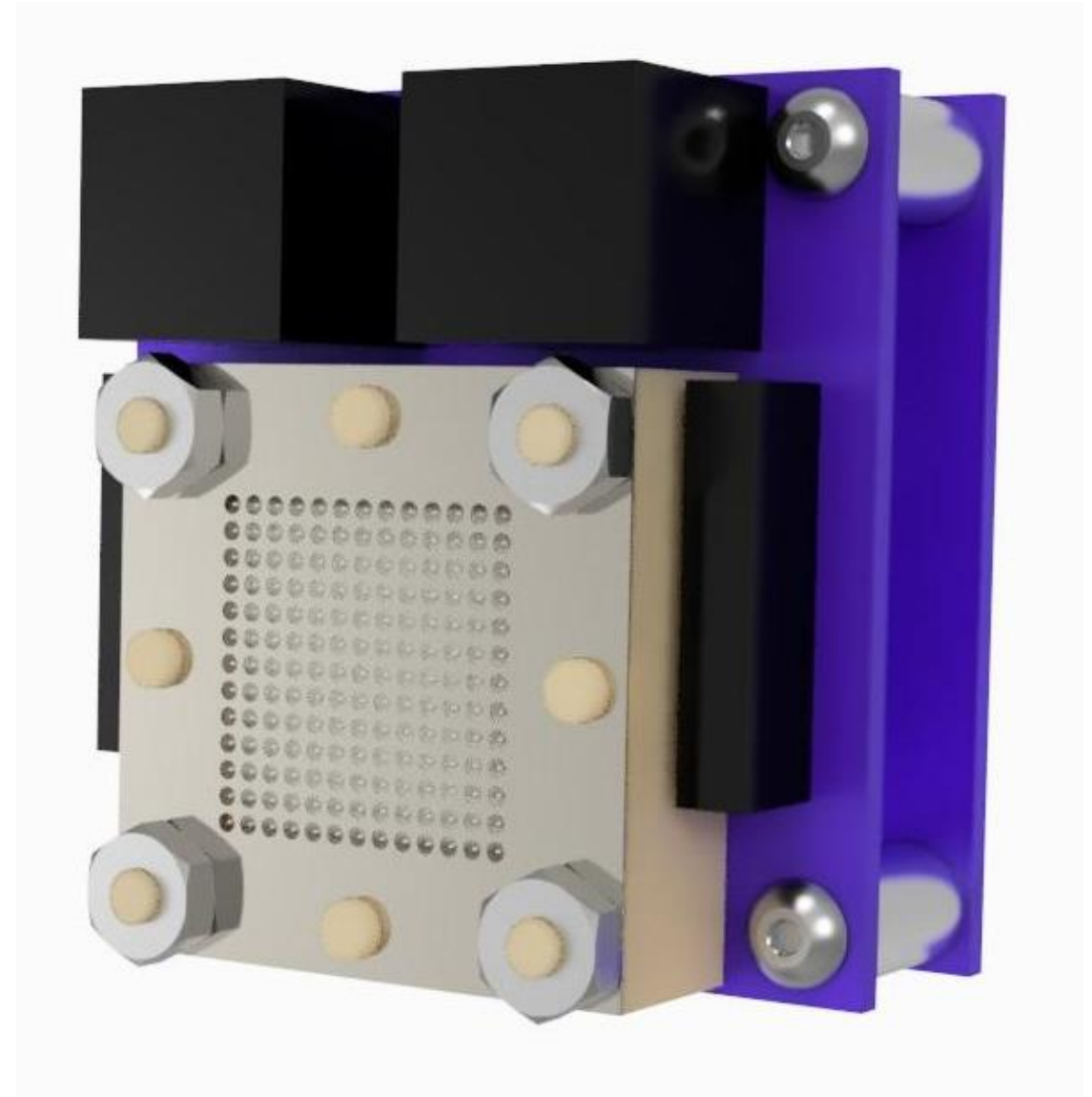
Power: 1.6W

Thrust: >20 μ N

ISP: >3500s

Total Impulse: >50Ns

Volume: 45x45x27mm



AIS-Io Series

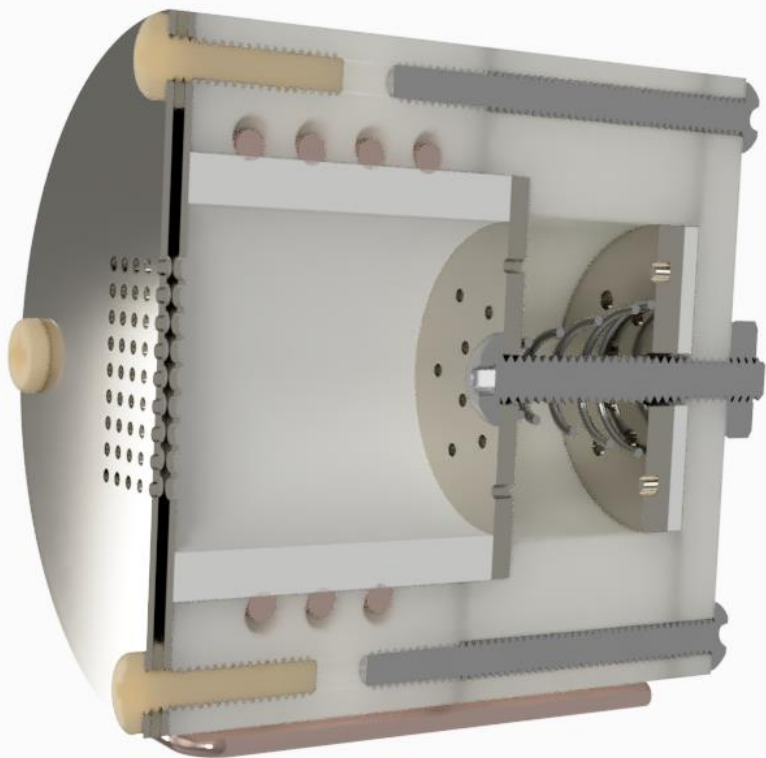
Modular, Low-Cost, Solid Iodine Fueled Thrusters



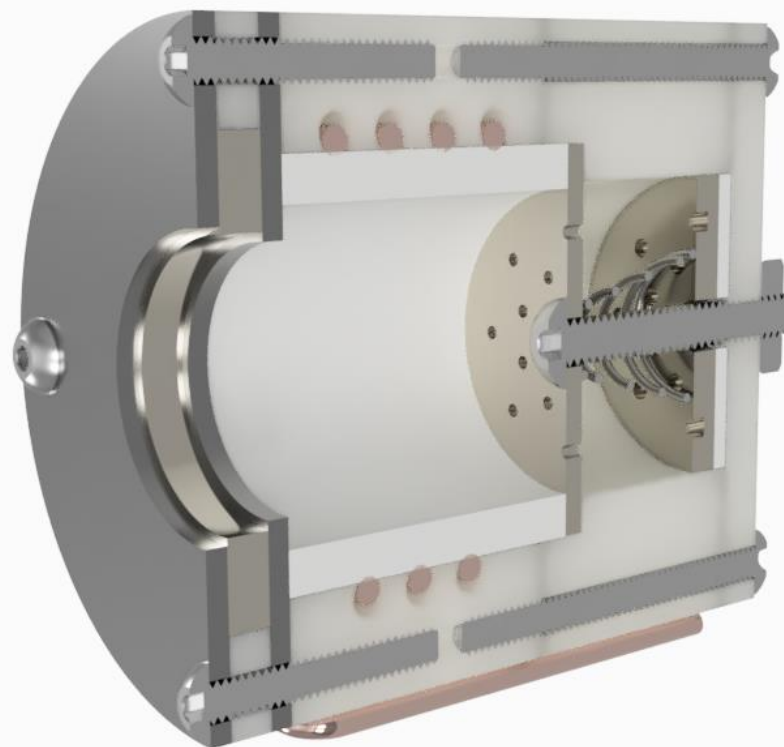
AIS-Io Series

Modular, Low-Cost, Solid Iodine Fueled Thrusters

AIS-Io Series RF Gridded Ion Thruster



AIS-Io Series RF Plasma Thruster



The AIS-ADAMANT Series:

Experimental Ultra-Modular Low-Cost Electric Propulsion

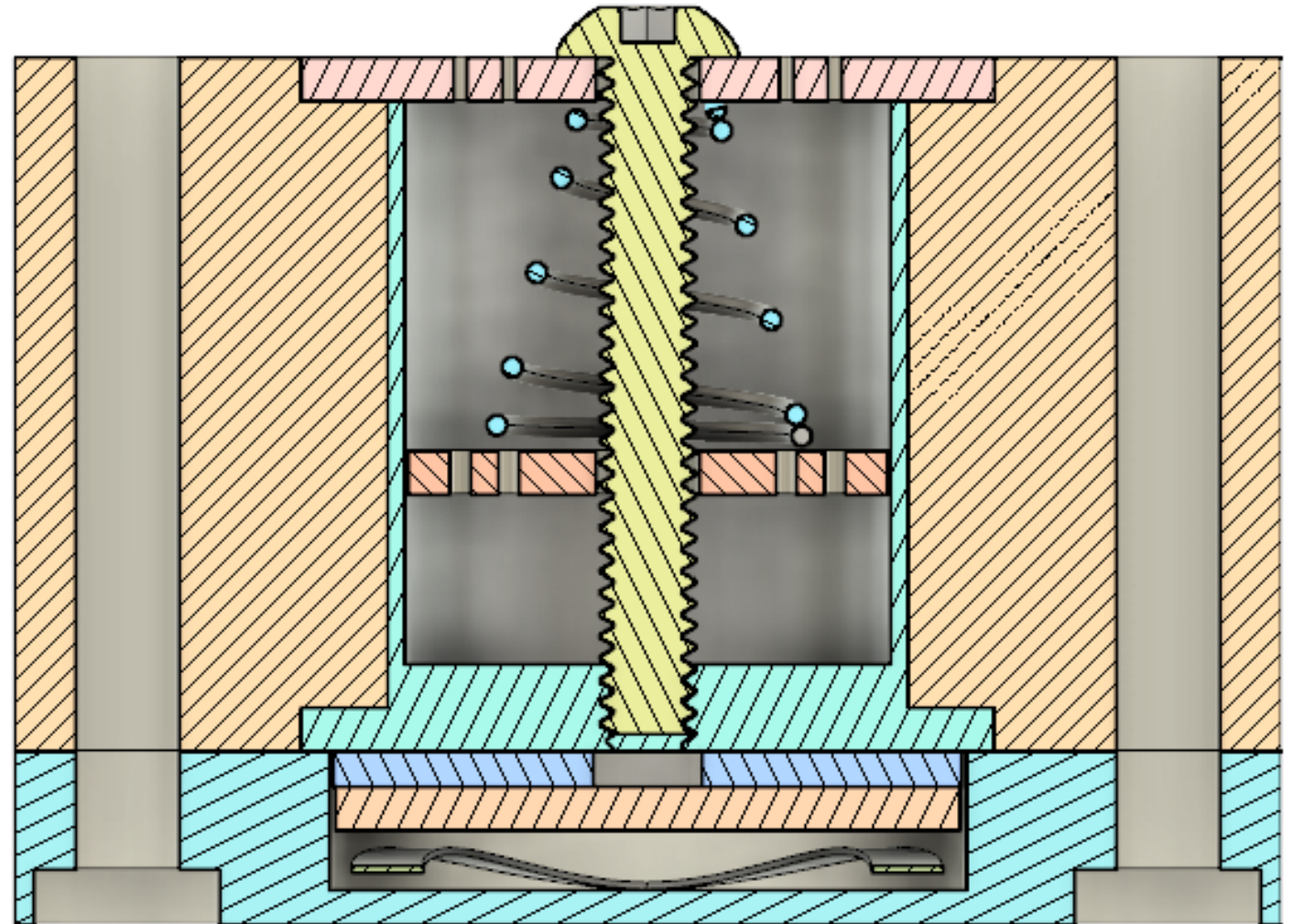
- Ultra modular
- Universal fuel delivery system
- Plug-n-play fuel cartridge
- Standalone compact fuel delivery
- No pressurization
- Expandable design for high capacity/flow rates
- Simple connection to each thruster design w/ adapter plate



The AIS-ADAMANT Series:

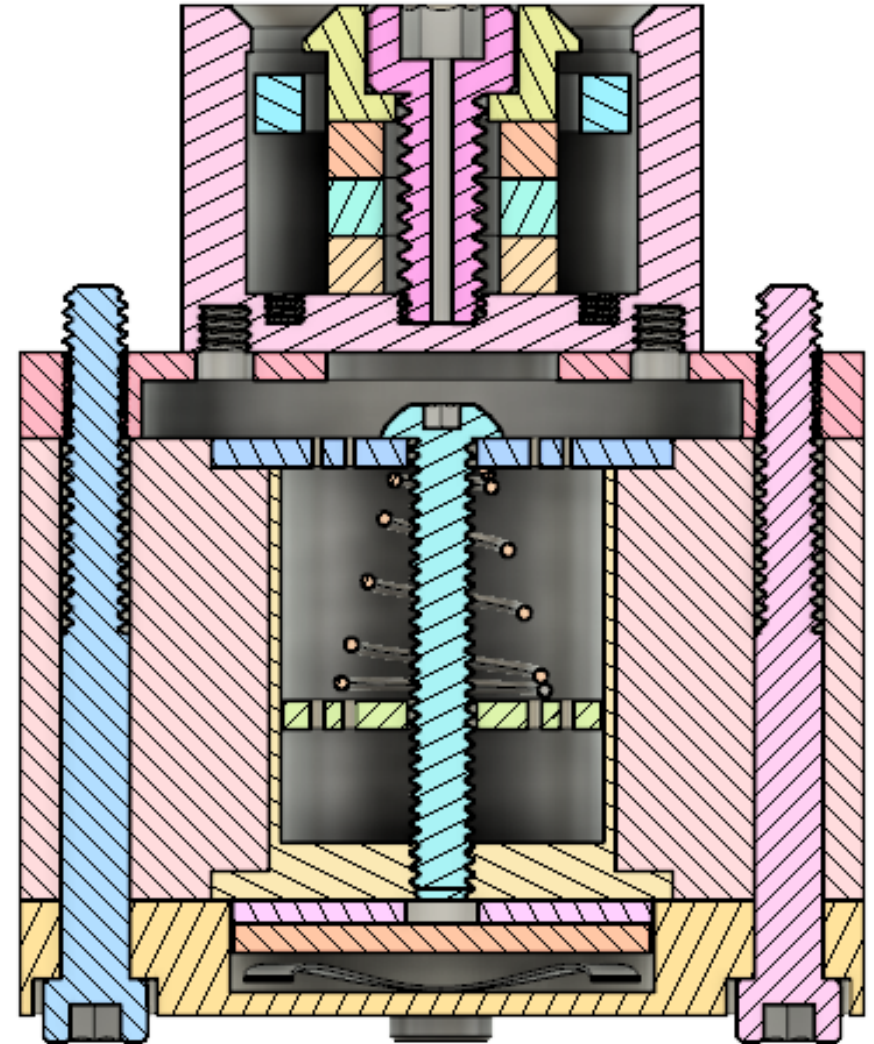
Experimental Ultra-Modular Low-Cost Electric Propulsion

- Highly experimental solid Adamantane fuel
- Low-power direct sublimation fuel delivery
- Cubesat to larger satellites
- 10W to >1kW
- 100s of μN to mNs of thrust
- Anode layer ion thruster, Hall thruster, gridded ion, RF plasma, micro-resistojet, etc



The AIS-ADAMANT Series:

Experimental Ultra-Modular Low-Cost Electric Propulsion



Learn More, Follow, Collaborate, Contribute!

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