Digital Solid State Microthrusters
Using Electrically Controlled
Extinguishable Solid Propellants

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Digital Solid State Propulsion Company (DSSP)
with ET Materials LLC
Electrically Controlled Extinguishable Solid Propellants (ECESP)*

- Throttles & restarts
- Two propellants: high and low conductivity
  - Each suited to either scaling up or down
- Isp’s of >220** sec.
- Insensitive; cannot be easily ignited without proper voltage/current maintained
- Smokeless, when non metallized
- “Green”, nontoxic components

*Developed and under multiple AFRL SBIRs
**@ 1,000 psi with a 10:1 expansion ratio
ECESPs Do Not Ignite With Torch
ECESP Propellants Allow Non-Hazardous Machining
Baseline Pulsing @ 1/10 sec.
Spring Fed Propellant

ASPEN 109 controllable propellant was repeatable, pulsing on and off using the low cost controller @ 120 VAC,
Combined Clusters* for Discreet and Throttled Impulse

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* Patent pending DSSP
Mid Power Operation
High Power Operation

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NASA Thruster Tests with Multiple Restarts and No Moving Parts

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ET Materials, LLC
ECESP New Applications

- Microsat primary propulsion
- Solid State ACS
- Modular On Orbit Re-fueling
  - No more complex than changing batteries in a flashlight
- Storable, “Responsive Space” Propulsion
- On Demand Gas Generators