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Thermally Stable Super-Hydrophobic Surface Creation

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**Thermally Stable Super-Hydrophobic Surface Creation**

Thermally stable super-hydrophobic surface coatings are critical to applications in low gravity fluid dynamics, and in particular Leidenfrost effects. The challenges of manufacturing different super-hydrophobic coatings that are thermally stable, semi-transparent, and environmentally safe at desired operating temperatures is pursued in order to explore the applications of such coatings aboard spacecraft. A catalog of surface coating manufacturing procedures is tabulated with measures for static contact angle, thermal stability, and transparency. These quantities and methods serve as a foundation for both technology applications and follow on experimentation concerning low gravity fluid mechanics at the Portland State Dryden Drop Tower lab.

![Figure (1a) Contact angle measurement images for all for surfaces](image1)

![Figure (1b) Average contact angle through time during thermal stability experiment](image2)