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## **VACUUM PLASMA SPRAY APPLICATIONS ON LIQUID FUEL ROCKET ENGINES**

**T. N. McKechnie\***  
Rocketdyne Division,  
Rockwell International  
Huntsville, AL

**F. R. Zimmerman\*\* and M. A. Bryant\*\*\***  
National Aeronautics and  
Space Administration  
Marshall Space Flight Center, AL

Vacuum Plasma Spray (VPS) technology is being jointly developed by NASA and Rocketdyne for diverse applications on liquid fuel rocket engines. VPS is a thermal spray process which deposits metal, ceramic or composite materials to form either coatings or near net shapes. Coating applications for thermal fatigue resistance, wear resistance, and improved bonding characteristics have been developed. Thermal Barrier Coatings for turbine components are being tested while copper bond coatings on cryogenic titanium components are in production on the Space Shuttle Main Engines. Much present research and development for the Space Shuttle, National Launch System, and National Aerospace Plane is being devoted to utilizing VPS to deposit structural materials in near net shape. Applications for combustion chambers require material properties of cast product of the alloys be obtained through the VPS process. Applications and properties for the VPS process and materials will be discussed.

\*Lead Engineer, MSFC Technology Support, AIAA Member

\*\*Metallurgical Engineer, Materials & Processes Laboratory

\*\*\*Chief, Space Shuttle Main Engine Production Engineering, AIAA Member