

## MATERIALS AND STRUCTURES SYMPOSIUM (C2)

## Poster Session (P)

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PREPARATION AND PERFORMANCE RESEARCH OF ANTI-ELECTROSTATIC WHITE  
THERMAL-CONTROL COATINGS FOR SPACECRAFTS**Abstract**

White thermal-control coatings on the exterior of the spacecraft could radiate heat for its low solar absorbance and high infrared emissivity, but the high resistance of the coating may cause charge accumulation, furthermore the static discharge would interfere the operation of electronic equipments. Therefore, it is essential to develop a coating which not only meets the requirements for the heat radiation of spacecraft but also is anti-electrostatic. Herein this paper provides a thermal-control coating with low solar absorbance, high infrared emissivity and low resistance. The effects of binder structure, the microstructure of the filler surface and the distribution of particle size, the formulation, the process parameters of the coating preparation and the like on the optical and electric properties of the coating were researched, thus an anti-electrostatic white thermal-control coating was obtained. The coating has a volume resistivity of less than  $1 \times 10^7 \Omega \cdot m$ , a solar absorbance of about 0.26, and a infrared hemispheric emissivity of 0.85.