

MATERIALS AND STRUCTURES SYMPOSIUM (C2)  
Space Environmental Effects and Spacecraft Protection (6)

Author: Dr. Yang Dongsheng  
China Academy of Space Technology (CAST), China, yds\_yds@sina.com

CONTAMINATION MEASUREMENT AND CONTROL OF CHINESE SPACECRAFT

**Abstract**

The general requirements for contamination measurement and control of Chinese spacecraft was introduced, include the ground processing facilities, ground test system and launching site. Screening non-metal materials used in spacecraft, through the materials outgassing characteristics test in vacuum. The concentration level of airborne particles inside the spacecraft items environmental areas was determined by particle counter. Nonvolatile airborne molecular contamination was measured by quartz crystal microbalance. The component and source of contaminants was analysed through gas chromatography-mass spectrographic technology. The test requirements of spacecraft hardware bakeout was determined by material outgassing test. Effects of condensed contamination on flight spacecraft performance was analysed by simulation computation. With the contamination measurement and control works, the cleanliness level of Chinese spacecraft was ensured, the degradation in spacecraft performance by contamination was minimized.