

MATERIALS AND STRUCTURES SYMPOSIUM (C2)  
New Materials and Structural Concepts (4)

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DEVELOPMENT OF C/C COMPOSITE CAMERA CYLINDER

**Abstract**

Carbon/carbon(C/C) composite camera cylinder is a key part of high resolution camera for earth observation from space. Its material selection, machining quality and stiffness determine directly performance of the finished product. Since it operates under stringent thermal environment, camera cylinder are demand to have high integral strength, stability and extreme low thermal expansion coefficient (close to 0) as well as quasi-isotropic in cylinder panel. Additional, it is also required to have high specific strength, moisture insensitivity and possibility to made complex architecture. With provision for its operation environment and performance demand, radial needling C/C composite with a density of 1.7g/cm<sup>3</sup> are selected and fabricated. Hoop tensile strength of the made C/C composite is above 160MPa and its thermal expansion coefficient in cylinder panel reach to 0.310-6/K. except for fulfill the performances, it has been successfully tested for sinusoidal vibration, powered impact, vacuum gas escape, light reflection.