

Development of Lyocell based Phenolic Impregnated Carbon Ablators (PICA-D)
for Future NASA Missions

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Phenolic Impregnated Carbon Ablator (PICA) is a low-density ablator that has been used as the planetary entry heatshield for several NASA missions since 1999. Due to the obsolescence of the input fiber source, new PICA materials were developed using Lyocell, a domestic rayon fiber source. Results are presented from this effort. Manufacturing included fiber conversion, fabrication of tile component and near net shaped heatshield preforms, and conversion to PICA materials. Thermal, mechanical, and representative environment arc-jet testing have been conducted. Initial testing indicates comparable performance with respect to heritage PICA material, and likely “drop-in” replacement for future NASA mission needs.