



Properties of M40J Carbon/PMR-II-50 Composites Fabricated with Desized and Surface Treated Fibers: Characterization of M40J Desized and Finished Fibers

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Properties of M40j Carbon/Pmr-II-50 Composites Fabricated with Desized and Surface Treated Fibers: Characterization of M40j Desized and Finished Fiber (Paperback)

By Ronald E Allred

Bibliogov, United States, 2013. Paperback. Condition: New. Language: English . Brand New Book ***** Print on Demand *****. To increase performance and durability of high temperature composites for potential rocket engine components, it is necessary to optimize wetting and interfacial bonding between high modulus carbon fibers and high temperature polyimide resins. It has been previously demonstrated that the electro-oxidative shear treatments used by fiber manufacturers are not effective on higher modulus fibers that have fewer edge and defect sites in the surface crystallites. In addition, sizings commercially supplied on most carbon fibers are not compatible with polyimides. This study was an extension of prior work characterizing the surface chemistry and energy of high modulus carbon fibers (M40J and M60J, Torray) with typical fluorinated polyimide resins, such as PMR-II-50. A continuous desizing system which utilizes environmentally friendly chemical- mechanical processes was developed for tow level fiber and the processes were optimized based on weight loss behavior, surface elemental composition (XPS) and morphology (FE-SEM) analyses, and residual tow strength of the fiber, and the similar approaches have been applied on carbon fabrics. Both desized and further treated with a reactive finish were investigated for the composite reinforcement. The effects of desizing and/or...



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