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**Title of Paper** (ten words or less): Low Cost Carbon Fiber for Transportation Applications

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**If yes, solicited by:**

**Abstract:**

The Department of Energy Partnership for a New Generation of Vehicles has shown that, by lowering overall weight, the use of carbon fiber composites could dramatically decrease domestic vehicle fuel consumption. For the automotive industry to benefit from carbon fiber technology, fiber production will need to be substantially increased and fiber price decreased to \$3 - \$5 / lb.

To achieve this cost objective, alternate precursors to pitch and polyacrylonitrile (PAN) are being investigated as possible carbon fiber feedstocks. High-volume, renewable or recycled materials, such as lignin, cellulosic fibers, routinely recycled petrochemical fibers, and blends of these components appear attractive because the cost of these materials is inherently both low and insensitive to changes in petroleum price.

Current studies have shown that a number of recycled and renewable polymers can be incorporated into melt-spun fibers attractive as carbon fiber feedstocks. Highly-extrudable lignin blends have attractive yields and can be readily carbonized and graphitized. Examination of the physical structure and properties of carbonized and graphitized fibers indicates the feasibility of use in transportation composite applications.

Initially, these studies were limited to single strand fibers. Recent studies, however, have demonstrated that multiple 20 micron drawable filament tows can be extruded with no sticking problems and with apparent improvements in filament properties.