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## Preparation of Mesophase Pitch and High Performance Carbon Fiber from Decant Oil

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The most efficient process and conditions for the preparation of mesophase pitch and carbon fiber from decant oil were examined. Mesophase pitch yield was extremely low (4.6%) when prepared directly by one step. A preparation method combining heat-treatment under pressure and heating under nitrogen flow improved the mesophase pitch yield to 19.0%. The optimum raw material was aromatic rich decant oil with a density of 1.05 g/cm<sup>3</sup> or more. The pressurizing heat-treatment temperature of the first step was optimum at about 400°C based on reaction time and solid carbonaceous formation. Carbon fiber thinner than 10 μm could be spun from mesophase pitch with lower content of quinoline-insoluble material. Carbon fiber spun from mesophase pitch with higher quinoline-insoluble content showed higher Young's modulus and tensile strength. Stabilization in air with 2% NO<sub>2</sub> improved the tensile strength.

**Keywords:** [Decant oil](#), [Mesophase pitch](#), [Stabilization](#), [Preparation condition](#), [Carbon fiber](#)

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