



Synthesis of Carbon Fiber from CO₂ and Coal

UW ID: 17-043

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Patent Status:

Patent Pending

Description of Technology

Coal tar is a liquid product resulting from coal pyrolysis, carbonization, or gasification processes. It consists of thousands of chemicals with various molecular weights, including aliphatic and aromatic hydrocarbons, oxygenated compounds (especially phenolic compounds), and nitrogen- and sulfur-containing compounds. Most of them are value-added chemicals or specialty precursors for producing carbon materials. Coal tar is a potential feedstock for producing chemicals, transportation fuels, and high-performance carbon materials with relevant industrial applications.

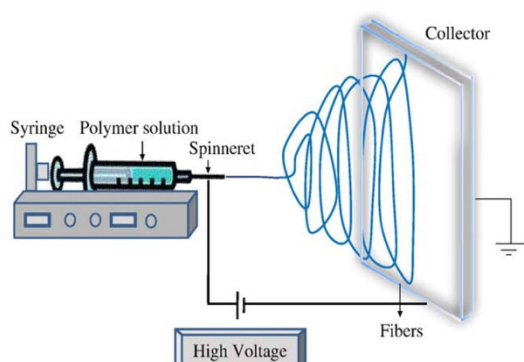
Researchers at the University of Wyoming have developed an experimental procedure that uses a unique technique of electrostatic forces to produce fine fibers from polymer solutions. Electrospinning of the spinning dope is performed on an electrospinning set-up which typically consists of multiple units: a syringe pump to control the flow rate of spinning dope, a spinneret for ejecting fibers, a collector for collecting fibers and a high voltage supply to apply an electric current between the spinneret and the collector. When the electric field applied is high enough, the electrostatic force overcomes the surface tension and thus a charged jet is ejected from the spinneret. When the jets arrive at the collector with further solvent evaporation, they become solidified into carbon fibers.

Applications

- The fibers that are produced have a thinner diameter and a larger surface area than those from conventional spinning processes.

Features & Benefits

- This research could create a different way to synthesize carbon nano-fibers.



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