

Reliability and Failure Analysis Lab

Carbon Fiber Manufactured via Ionic Liquid

Technology

Researchers at UAH have developed carbon fiber from Ionic Liquid (IL) processes. At least four IL compounds, such as cellulose solvents, BMIM and EMIM acetate ionic liquids, were tried and all were successful to make carbon fiber. In this process, ionic liquid derived rayon is made, and is then converted to carbon fiber.

This process allows the manufacturing of rayon-based carbon fiber in the United States. Current rayon-based carbon fiber is ceased to be made in the US due to Environmental Protection Agency restrictions.

Carbon fiber made from rayon has the best properties for rocket nozzle fabrication and as a hot-structure in spacecraft construction that forms part of the thermal protection system.

There is no other known process competitive to this process in terms of low cost and mass production of structural carbon fiber.

Applications

- Aircraft structural body
- Rocket nozzles
- Heat shields

Advantages

- The IL –made rayon can be used to make carbon fibers using the standard heating technologies used in the past.
- Green process, can meet the Environmental Protection Agency restrictions.
- Carbon fibers made here can be mass produced.
- Low cost structural carbon fibers
- This IL process is unique in that it is a low-temperature process.

Status

State of Development: Prototype

Licensing Status: Available for licensing

Patent Status: Proprietary

Contact

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