



Conductive Multifunctional Composite Preform (M-TOW)

A next-gen fiber preform adds high electrical and thermal conductivity for automotive molding.

Researchers at Purdue University have developed an electrically- and thermally-conductive form of M-TOW, their previously developed thermoplastic composite. M-TOW is a rod of fiber pre-impregnated with synthetic resin; it can be formed into any three-dimensional complex-shaped part such as typically requested in automotive applications. Traditionally, M-TOW is over-braided with non-conducting fibers like glass or carbon, which does not provide substantial electric or thermal features and has limited its use in applications where this would be desired. With conducting elements such as filaments/fibers/wires, the new form of M-TOW offers grounding and heat dissipation capabilities, which are useful for automotive and other applications.

Technology Validation: This new form of M-TOW has over 10 million times greater electrical conductivity and nearly 25 times greater thermal conductivity than carbon additive M-TOW.

Advantages

- similar cost to traditional M-TOW
- higher electrical and thermal conductivity than traditional M-TOW or composite materials

Applications

- molding/injection-molding and/or hybrid-molding for automotive applications

TRL: 3

Intellectual Property:

Technology ID

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Category

Materials Science &
Nanotechnology/Composites &
Hybrid Materials
Chemicals & Advanced
Materials/Materials Processing &
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Further information

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