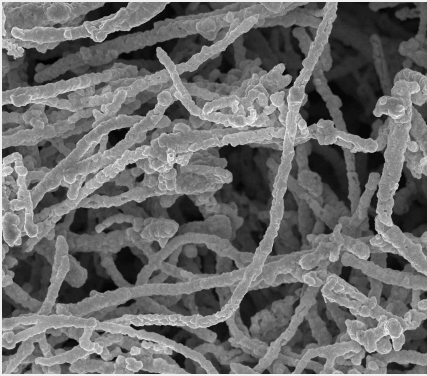




Conductive hybrid nanofibers: bringing a high conductivity to polymers



Background

Currently, high conductivity in conductive composites is obtained at the cost of a high-silver loading from which high weight and material costs ensue. Moreover, these materials face high melting viscosity making them unappropriate to use as conductive filaments in the growing market of 3D printing. Profesor Therriault and his team have developed a new technique for producing conductive hybrid nanofibers to adress these issues.

Technology

This technology consists in a chemical deposition of silver on carbonaceous particles. The process is based on carbon nanofibers that are commercially available and includes few steps (functionalisation, sensitisation and silver deposition). The resulting product is a uniform and continuous silver coating carbon nanofiber. Within 24 hours, we are able to produce low-cost and very highly conductive nanofibers : the specific conductivity of our final product is around 250 S.cm²/g, which is only ten times lower than pure silver.

Application

The applications for this technologies are numerous. You can add conductive properties to the thermoplastic that you are using in your actual 3D printer without facing the usual melt viscosity issues that comes along classical conductivity material. You can also build low cost-high performance electrically and/or thermally conductive adhesives or conducting tape. Finally, you can make highly conductive coatings with tunable conductivity wherever you need, and avoid the use of costly and heavy materials dedicated to this function.

Competitive Advantages

- Lower manufacturing costs than metallic nanowires and copper/silver nanoparticles;
- Conductivity only ten times lower than pure silver;
- Conductivity / cost ratio among the highest in comparison to competitive technologies;
- High conductivity in electrically conductive adhesives using five times less silver than competing products.

Patent

Next Steps

This technology is already available for licensing. We are looking for a partner to develop the technology.

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