**Improved Fused Filament Deposition 3D Printing Using Filaments Coated With Thermoreversible Thermosets**

**UA ID Technology #ua18-236**

**Title:** Improved Fused Filament Deposition 3D Printing Using Filaments Coated with Thermoreversible Thermosets

**Invention:** This invention demonstrates a new polymer to coat the spool of thermoplastic filament used in fused deposition modeling (FDM) 3D printing with a thermoreversible thermoset. The goal is to provide a layer that will liquefy in the hot printer nozzle to produce a lower viscosity liquid polymer. This coats the melted filament and increases the wetting and adhesion between layers, ultimately creating a stronger end product that will hold together well.

**Background:** FDM 3D printing is the most common 3D printing technique. In FDM printing, a spool of thermoplastic filament is used and placed in continuous layers. However, a huge problem that remains unsolved is the poor wetting and increased porosity between layers, which results in a weak final product.

**Applications:**
- FDM 3D Printing

**Advantages:**
- Limits the deformation of the 3D structure by alleviating poor adhesion
- Limits residual, hazardous organic solvents, making an environmentally friendly product

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