



## ROTATING NOZZLE STRUCTURE AND METHOD

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### The Invention

UW-Madison researchers have developed an improvement to the Fused filament fabrication (FFF) 3D printing process whereby rotating the nozzle at high speeds causes the polymer melt along the wall to shear and lead to viscous dissipation. Polymer melts are extremely viscous and when an external force is applied, heat is generated due to the internal friction (viscous dissipation). This additional heat speeds up the conduction between the hot nozzle wall and solid polymer filament and can be utilized to promote melting of the solid polymer filament and allow for higher printing speeds than are currently possible.

### Additional Information

#### For More Information About the Inventors

- [Tim Osswald](#)

#### Tech Fields

- [Engineering : Additive manufacturing](#)

For current licensing status, please contact Michael Carey at [mcarey@warf.org](mailto:mcarey@warf.org) or 608-960-9867