



Manufacturing Polymer Micropellets

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method to produce polymer micropellets from a melt using pressurized airflow.

Overview

Polymer-based micropellets can be formed having diameters smaller than 50 microns. The miniscule particles are vital to a number of processes like laser sintering—used to build rapid prototypes and molds—and manufacturing porous plastics parts. To make quality products, control over the shape, size and distribution of particles is key.

Conventional micropelletization techniques can result in particles of dissimilar size, with irregular shapes and surfaces. Such techniques also are expensive and unsuited to various polymers.

The Invention

A UW–Madison researcher has developed a micropelletizing method and apparatus for controlling the size and shape of polymer particles.

In the process, a thin melt of polymer material is extruded through a specialized nozzle. A jet of heated, pressurized air then is applied. This causes the thread to stretch and break up into individual droplets due to surface tension effects known as Rayleigh disturbances.

The droplets are allowed to cool and solidify into micropellets. Factors like temperature, speed and extrusion rate are used to control droplet formation.

Applications

- Plastics processing
- Laser sintering
- Polymer-based parts and medical devices

Key Benefits

- Process control
- Micropellets can be any suitable shape, including spherical.
- Particle size is adjustable and smaller than two millimeters in diameter.
- Suitable to different polymers

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Additional Information

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For More Information About the Inventors

- [Tim Osswald](#)

Tech Fields

- [Materials & Chemicals : Polymers](#)

For current licensing status, please contact Michael Carey at mcarey@warf.org or 608-960-9867

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