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Free Flyer Centrifuge for Microgravity Operations for Separation of Materials Based on Mass

Thruster-operated, free-flying centrifuges enable adjustable, mass-based fluid separations in low, micro, or zero gravity environments, overcoming limitations of current motor-based systems.

Researchers at Purdue University have developed a centrifuge for mass-based separations in low gravity, microgravity, or zero gravity environments. Current centrifuge technology for separating components of fluids in microgravity and zero gravity environments are based on the mass of the components and typically use electrical motors. The Purdue researchers' free-flying centrifuges use thrusters to apply a force to float the centrifuge into free flight in an open space. The thrusters can also be used to generate a rotational spin of the centrifuge about the central rotational axis. The system includes positioning sensors, allowing the user to adjust the thrusters to position the centrifuge in the desired location.

Technology Validation: The researchers successfully centrifuged yeast using their system.

Advantages:

- Functions in low gravity, microgravity, and zero gravity environments

- Allows adjustment of position of the centrifuge in free space

Applications:

- Mass-based separations in low gravity, microgravity, or zero gravity environments

TRL: 3

Intellectual Property:

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Category
Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

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