

Abstract Submitted  
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**Implementing the Advanced Annular Couette Centrifuge Method to Optimize Liquid Centrifugation** DEBRA KRANZLIN, Fordham University, ERIK GILSON, Princeton Plasma Physics Laboratory, AACC COLLABORATION — We focus on research and examination of various types of centrifuges used in industries around the world to determine the effectiveness of implementing the Advanced Annular Couette Centrifuge (AACC) technology developed by researchers at PPPL. The AACC method was developed to enhance the separation efficiency of liquid centrifuges by modifying a Taylor-Couette (T-C) device. T-C flow is the flow of a fluid between two co-axial differentially rotating cylinders. The PPPL method limits secondary flows and turbulence by having end-cap rings spinning at intermediate speeds so that the inner cylinder spinning at higher speeds can create higher effective gravity. The modified T-C device can promote mixing or separation by keeping the fluid in one container and adjusting the two rings' speed. An engineering study examines the current applications of traditional centrifuges in agricultural and chemical engineering processes, energy applications, and the separation of sub-micron-sized particles in liquids. The research conducted allows the conclusion that AACC technology can reduce process times and increase cost-efficiency. This new method can be applied to optimize the current technological properties and various applications of liquid centrifuges used in industries around the world.

Debra Kranzlin  
Fordham University

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