

Modeling and scale-up of centrifugal filtration

Many processes for the manufacturing of solid substances consist of a flow with reactions, downstream processing with crystallization, filtration and drying operations. If problems occur in filtering operations, it often leads to reductions in product quality, large reductions in productivity and efficiency, and it is important to stabilize filtering processes in the manufacturing processes. Centrifugal separation is widely applied technique in many downstream processes of chemical industries, especially in pharmaceuticals (APIs), fine chemicals, dairy and food products where high capacities, purities and dryness of the solid material is required. Filtering centrifuges can be found from large-scale commercial applications to laboratory-scale scientific research. Centrifuges are referred to be the “Rolls Royce” of solid liquid separation field, due to being extremely high quality and powerful machines and their capital investment being quite high compared to other separation techniques. Thus to minimize the trouble with centrifugal separators during manufacturing it is necessary to be able to improve the techniques and possibilities for reliable scale-up by measuring effectively operations and operating conditions, filter cake formation, physical properties at smaller scale. The project is planned to aid the industry, especially pharmaceuticals field, to make better investments and have better abilities to represent their scenarios computationally without the need to experiment in large scale production.

Researcher: Damla Serper

