

Fouling during Synthesis of a Latex Dispersion

Start: Immediately

Emulsion polymers have a wide range of applications, including paints and adhesives. In 2018 alone, revenue from these polymers amounted to 40 billion USD. During the production of emulsion polymers, unwanted deposits (*fouling*) can form on reactor walls, pump components, and heat exchangers. This fouling significantly reduces heat transfer efficiency, and its removal requires extensive cleaning efforts.

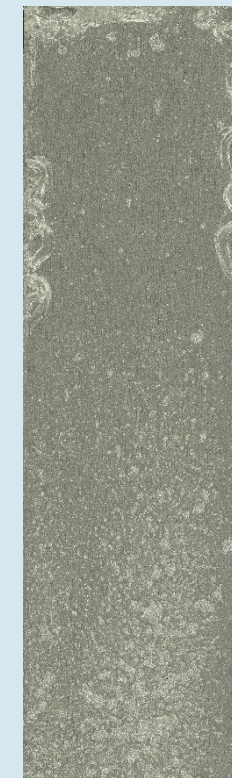
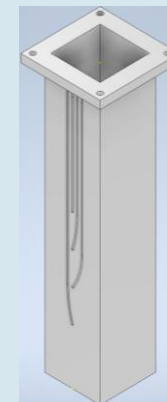
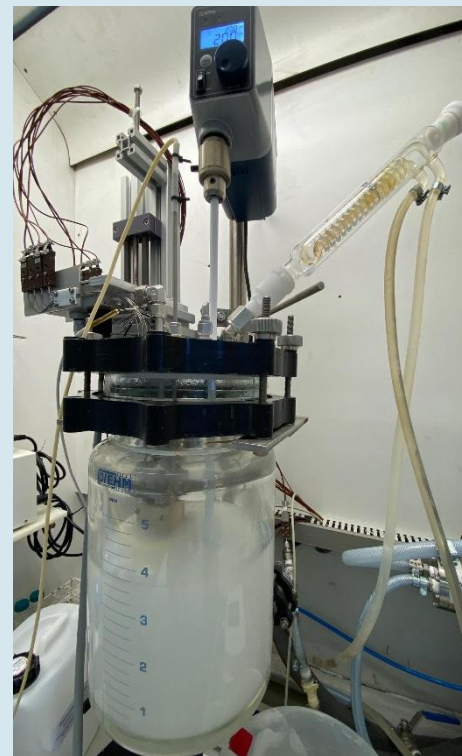
In this project, the effect of reaction parameters on rates of fouling will be studied. Two novel pieces of instrumentation will be designed, including a moving heated-finger in the reaction vessel and a flow channel with a quartz microbalance integrated within a bypass loop.

Your tasks:

- Planning and conducting polymerization experiments
- Characterizing fluid properties using various laboratory devices
- Data evaluation with Excel, Origin, or MATLAB/Python

In general, there is flexibility to tailor the topic to your interests. If you enjoy experimental lab work and want to actively contribute to the characterization of emulsion polymerization, feel free to get in touch!

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Reaction vessel

Heated finger

Polymer-fouling