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SoLiFi - Method for modeling the solid-liquid filtration process

ID: 02671

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The filtration process in the oil industry costs approximately $1.9 billion per year. Because of the high demand for the oil industry, expenses continue to increase by roughly $70 million per year. SoLiFi helps oil companies design novel filtration processes to reduce the cost (millions per year for each oil company) and also helps them to increase productivity. It designs the optimal filtration process with computational modeling tools with more than 95% accuracy.

Technology Description

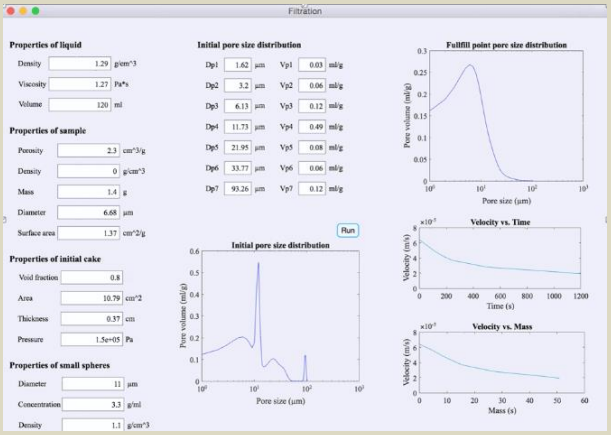
This invention is a software-based service for modeling the solid-liquid filtration process and estimating the dynamic permeability of porous materials undergoing multi-phase flow. The model can predict the dynamic behavior for both the liquid and solid phases from first principles and simple physical characterization experiments. Users only require the intrinsic physical properties of the liquid and solid materials. With this information, our model can provide the estimated pressure drop, flow dynamics, filter cake structure, effluent concentration, and permeability throughout the duration of the process of interest. This model can be used to predict many aspects of industrial filtration processes such as water purification, groundwater flow, oil transport in porous rock, and selection of filter aid with higher accuracy and much lower consumption of time, effort, and money than existing models.

Advantages

- Prevents clogging problems
- Reduces recycle/shutdown/change-out times
- Reduces test time by 95%
- Reduces operating costs (time and effort)

Applications

- Oil filtration process design
- Wastewater treatment
- Wine grade
- Food filtration
- Mining filtration
- Pharmaceutical production



Software interface for modeling filtration process.

Stage of Development

We have developed a simulation model that will be used to mimic the industrial filtration process. We are currently verifying the model with both lab and industrial scale filtration process.

IP Status

Notable Mentions

First Gear I-Corps Program, Summer Cohort $3,000

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