

Modeling and optimization of polymer washing process after condensation polymerization reaction using shrinking-core model

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After condensation polymerization reaction, condensation polymers are isolated by solidifying in a solvent. But at this time a few amounts of impurities such as catalyst or by-product remain trapped on the inside of the polymers. So we necessarily remove the remaining impurities through the washing process to improve the purity of polymers after the reaction. And optimization of time, energy, resources for the polymer washing process is essential to produce quantities of condensed polymers at plant scale. But the systematic washing process after condensation polymerization reaction hasn't been developed yet. In this research we analyze the fundamental mechanism of polymer washing process, proceed the modeling of the washing process with shrinking-core model, estimate parameters and validate the model with washing process data of Sulfonated poly aryl ether ketone, and optimize the washing process with the model.