* A supercritical extraction model with decaying extraction kinetics and Cubic Equation of State is presented
* Parameters such as the partition factor, internal diffusion coefficient, and decaying factor are determined through maximum likelihood estimation based on a set of experimental performed at different operating conditions
* The close fit between the model predictions and experimental data underscores the model's capability to capture the essential dynamics of the extraction process
* The multiple linear regression is used to find correlations between the estimated parameters and operating conditions