

Kinetic Parameter Estimation of Metabolic Reactions in *Clostridium acetobutylicum*

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A kinetic model to describe the dynamic metabolic behavior in *Clostridium acetobutylicum* ATCC 824 used for acetone-butanol-ethanol (ABE) production is developed by modifying the previously proposed metabolic pathways. We use an efficient optimization algorithm combining a genetic algorithm and an interior point algorithm in order to estimate the kinetic parameters of the model with experimental data, e.g. concentrations of metabolites, glucose and cells, obtained from a batch fermentor. All the parameter sets estimated from the first 36-hour experiment have been verified with the data sets of the additional experiments. This kinetic study will contribute to modifying and improving *Clostridium acetobutylicum* for enhanced ABE production.