

An Optimization Approach for Integrated Design and Parameter Estimation in Process Engineering

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Typical problems in (bio)chemical processes such as integrated design and parameter estimation can be stated as non-linear programming problems subject to non-linear differential constraints. These are frequently non-convex and/or ill-conditioned. Besides, the computational time associated to each function evaluation (i.e. simulation) can be considerably high. To surmount these disadvantages, the use of global optimization methods is proposed. In particular, those methods that use any sort of surrogate model instead of the original model are intended to provide good solutions in relatively short computation times. We will focus in a computationally expensive model to test the capabilities of some global optimization methods based in surrogate models which are currently being investigated in order to effectively apply them to costly process engineering problems.