Mathematical Modeling and Simulation for
Vapor-Phase Cracking of Acetone process

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Chemical engineers need to model processes if they are going to design those devices and processes. Since the modeling of devices and phenomena is essential to engineering and science, chemical engineers have very practical reasons for doing mathematical modeling. Therefore, more and more chemical engineers depend heavily on mathematical modeling.

Many chemical engineering problems can be described by differential equations with known initial conditions, with known or given values of the state variables at the start of process. Numerical integration techniques generally suffice to solve initial value problems. This problems can be solved by using MATLAB.

In this research, I considered a nonisothermal, nonadiabatic tubular reactor as a distributed systems. Object of research is to find its steady-state concentration and temperature profiles. Specific process involves the vapor-phase cracking of aceton into ketone and methane, described by the endothermic reaction.