Abstract

This paper presents a decoupled control strategy using time-varying sliding surface-based Sliding Mode Controller (SMC) for a multivariable nonlinear system as an Ammonia Reactor system. The decoupled method provides a simple way to achieve asymptotic stability by dividing the system into three subsystems. Simulation results are presented for SMC comparing with a traditional PID controller. Then, the system is subjected to temperature disturbance to demonstrate the effectiveness and robustness of the controller.

**Index Terms**

Computer Science  
Control Systems

**Keywords**

Sliding Mode Controller  
Ammonia Reactor  
Decoupled system  
PID controller