Simulation of chemical vapor decomposition reactor for manufacturing polysilicon

최병희, 양대륙*
고려대학교
(dryang@korea.ac.kr*)

Nowadays demand for polysilicon have increased so there is a need for build a factory to manufacture polysilicon. To construct them, there should be a reactor model that can explain process well. This paper, therefore, design a chemical vapor decomposition reactor model which based on siemens process, the one of most popular polysilicon product process. Model is considered that heat transfer ,including convection, radiation and reaction, mass transfer, fluid dynamics, reaction rate and Maxwell's equation. Matlab and COMSOL4.2, a CFD program, is used for simulation. Then model is compared with other model suggested by other article and POLYSYM, a commercial simulation program for siemens process.It is compared by energy consumption and growth rate which is the most important factor in this reactor.