

**Modeling and simulations of the high pressure organometallic chemical vapor deposition of InN using trimethylindium and ammonia.**

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A physico-chemical model of the High Pressure Organometallic Chemical Vapor Deposition (HPOM-CVD) process that describes three dimensional transport phenomena as well as gas-phase and surface reactions underlying the growth of compound semiconductors is presented. A reduced-order model of the Organometallic Chemical Vapor Deposition of indium nitride from trimethylindium and ammonia at elevated pressures has been developed and tested. The model describes the flow dynamics coupled to chemical reactions and transport in the flow channel of a Compact Hard Shell Reactor, as a function of substrate temperature, total pressure and centerline flow velocity.