

## Synthesize High Molecular Weight Polyvinylsilazane with RAFT Agent by Using Microwave Preparation

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Recently, Polyvinylsilazane (PVSZ) is used as the well known preceramic polymer for SiCN and/or Si<sub>3</sub>N<sub>4</sub> ceramic materials. Because of its excellent thermal stability, good thermal conductivity, good chemical properties and oxidation resistance, PVSZ find widespread applications in many technologies. Microwave-Assisted synthesis has long been known to accelerate thermal reactions and there exist many literature examples whereby microwave reactors have been used in conventional free-radical polymerization. High molecular weight and high conversion Polyvinylsilazane have been successfully synthesized by reversible addition fragmentation chain transfer (RAFT) polymerization in toluene at temperature 120°C, using microwave method. The conversion of Polyvinylsilazane with 81.7% was readily controlled to obtained the molecular weight 5911 with narrow polydispersity <1.5. The resulting polymer showed a high ceramic yield of 71% at 1000°C. Interestingly, the polymerization time of Polyvinylsilazane has reduced by the use of microwave heating, compared to conventional heating.