

## Synthesis and Characterization of Hybrid Precursor Polycarbosilane (PCS) with Zeolite Catalysts

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Polycarbosilane (PCS) is a well known preceramic polymer as a SiC precursor, which has been used for high temperature structural applications such as fiber, composites. However it was disadvantageous with relatively harsh reaction conditions using an autoclave above 400°C. In this study, PCS was synthesized from polydimethylsilane (PDMS) with the presence of various types of zeolites as catalysts at 350°C for 6hrs and followed by heating to 400°C for additional 6 hrs. The obtained products were mainly fractionated into the soluble solid part and the volatile low molecular weight part by heating at 250°C under a nitrogen atmosphere. Moreover, the soluble solid part was modified by using additives (Polyborazine, Polymethylsilane and SiCBN) to get hybrid precursor. The hybrid precursor PCS were determined by TGA, FT-IR, GPC, NMR, XRD analysis to investigate the effect of the catalyst on characteristics of the polymer.