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Chemical Vapor Deposition of Polybenzoxazole Precursors MITCHELL ANTHAMATTEN, XICHONG CHEN, Deptment of Chemical Engineering, University of Rochester — Polybenzoxazoles are well known for their outstanding thermal and mechanical properties. We will describe a new solventless, chemical vapor deposition approach to fabricating films of high strength polybenzoxazoles. Advantages of such an approach are: 1) control of film thickness, 2) conformal coating onto substrates, and 3) potential improvement of in-plane mechanical properties. Our process involves the vacuum evaporation of two monomers: a hydroxyl-functionalized diamine (DHB) and a dianhydride (PMDA). The resulting films appear uniform and contain poly(amic acid) linkages. FTIR experiments show that the poly(amic acid) converts to a polyimide material upon curing at 150 to 200 degrees C. At higher temperatures there is evidence that benzoxazole linkages form, though, interestingly, we also observe a concomitant decrease in the film's mass. Our current studies aim at understanding these high-temperature processes and how they impact the polymer's crystallinity and mechanical properties.

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