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**Preparation and Properties of Some Novel Polybenzoxazines Containing
Pendent Aliphatic Chains**

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Polybenzoxazine as a newly developed type of phenolic resin has an excellent properties-processability-price balance. Despite having the usual characteristics of the typical phenolic resins, such as heat resistance, good electronic properties and flame retardance, polybenzoxazines have additional advantageous characteristics superior to the typical phenolic. These characteristics include low melt viscosity of the monomers, no strong acid or basic catalysts needed for the polymerization, and no by-products evolved during the polymerization as well as near-zero shrinkage or expansion upon curing. However, the brittleness is considered the main disadvantage of this new class of thermosets, like all the conventional resins. In the current study, we have prepared a series of new monofunctional and bifunctional benzoxazine monomers from different long chain aliphatic amines, paraformaldehyde and various phenols, using solventless method. The structure of the novel monomers was confirmed by IR and ¹H-NMR, indicating the presence of cyclic benzoxazine structure. The thermosets obtained by the thermal cure of benzoxazine monomers showed improved toughness with lower glass transition temperatures than the typical known types of polybenzoxazines due to the flexibilizing effect of the long aliphatic chains in the novel polybenzoxazine.