SYNTHESIS AND CHARACTERIZATION OF MELAMINE BASED (CO)POLYMERS

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ABSTRACT

Melamine is long known as raw material for formaldehyde based aminoplastic resins, which are used in the wood industry, for laminates, electrical insulations or wet strength agents in paper and are thermosets[1]. In the search for novel melamine based polymers we have used alkyl melamines as starting materials in order to decrease the possible degree of crosslinking and therefore provide resins which are not necessarily thermosets but can also be used to build up linear polymers.

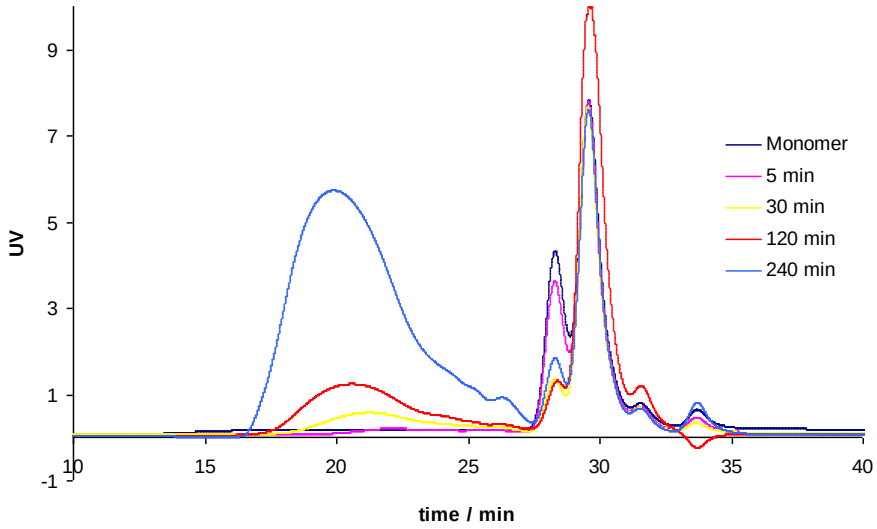

Fig. 1. Free radical polymerization of allylpentamethylmelamine followed by SEC.

In this paper we discuss the synthesis and characterization of methyl melamine formaldehyde polymers, as well as the formaldehyde free polymers based on vinyl and allylmelamines (Fig. 1) and their copolymers[2]. Monomer structures have been assigned by NMR, MS and elemental analysis. Elucidation of the chemical structures of polymers was done with MALDI-ToF MS, CID fragmentation, and SEC; thermal stability and degradation behavior were determined by TGA-IR experiments.

References

1. Hentrich, W.; Köhler, R. DE 647 303, Henkel & Cie, 1937
2. Schmidt, H.; Schwarzinger, C.; Huber, W.; Irrgeher, M. *PCT/AT2009/000272*, Johannes Kepler University Linz, 2009