

# FUNCTIONAL ALKYLMELAMINE POLYMERS

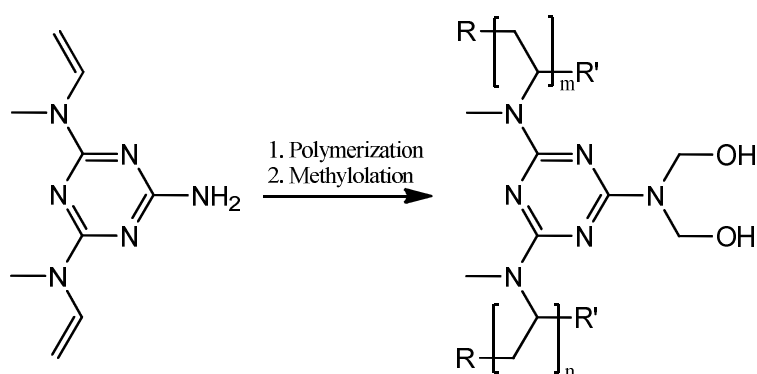
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## ABSTRACT

Melamine and its derivatives are well known in resin chemistry since more than hundred years. To enable polymerization of melamine it is necessary to incorporate double bonds into the monomers. A recently developed method is the vinylation of alkylmelamines with acetylene under alkaline reaction conditions [1]. The reaction is methylamino selective and the number of vinyl groups depends on the degree of methylation. For this reason alkylmelamines with amino groups as starting material are of interest to yield functional polymers. Monomers with one vinyl group, like N-methyl-N-vinyl melamine builds up linear functional polymers. Cross-linked polymers require monomers with two or more double bounds. The polymerization of N, N'-dimethyl-N,N'-divinyl melamine (Fig. 1) yields a highly cross-linked polymer which has free amino functionalities left for further derivatization. In a second reaction step the methylation with formaldehyde at the amino group is possible resulting in reactive hydroxyl groups. The latter can either be used for further cross linking according to a polycondensation mechanism or for coupling to other functional molecules.

In this work, monomers with different functionalities were synthesized, polymerized and characterized.



**Fig. 1.** Synthesis of a functional polymer via polymerization and methylation.

## References:

- [1] Schmidt, H.; Schwarzinger, C.; Huber, W.; Irrgeher, M. *PCT/AT2009/000272*, Johannes Kepler University Linz, Jul. 09, 2009