

# **Statistical Copolymers of N-Vinylpyrrolidone and Isobornyl Methacrylate via Free Radical and RAFT Polymerization: Monomer Reactivity Ratios, Thermal Properties and Kinetics of Thermal Decomposition.**

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**Abstract:** The synthesis of statistical copolymers of N-vinylpyrrolidone (NVP) with isobornyl methacrylate (IBMA) was conducted by free radical and reversible addition-fragmentation chain transfer (RAFT) polymerization. The reactivity ratios were estimated using the Finemann-Ross, inverted Fineman-Ross, Kelen-Tüdös, extended Kelen-Tüdös and Barson-Fenn graphical methods, along with the computer program COPOINT, modified to both the terminal and the penultimate models. In all cases, the NVP reactivity ratio was significantly lower than that of IBMA. Structural parameters of the copolymers were obtained by calculating the dyad sequence fractions and the mean sequence length. The thermal properties of the copolymers were studied by Differential Scanning Calorimetry (DSC), Thermogravimetric Analysis (TGA) and Differential Thermogravimetry (DTG). The results were compared with those of the respective homopolymers.