Synthesis, characterization and molecular dynamics simulation of dendronized poly(3,5-diphthalimidoalkylphenyl methacrylate)s

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Dendronized methacrylates containing 3,5-diphthalimidoalkylphenyl moieties (with ethyl, propyl or butyl spacer groups) were synthesized. These monomers were then polymerized using radical polymerization. Monomers and polymers were characterized using Fourier transform infrared spectroscopy (FT-IR) and nuclear magnetic resonance methods (1H NMR and 13C NMR). Molecular weight was estimated by multi-angle static light scattering (MALS). Molecular dynamics simulation was performed to evaluate the conformational radius of gyration (Rg) and the end-to-end distance (ree). Different spatial arrangements depending on the length of the spacer group are observed.

Dendronized polymers

End-to-end distance

Molecular dynamics simulation

Poly(phtalimidoalkyl methacrylate)

Radius of gyration

Spacer groups

Fourier transform infrared spectroscopy

Light scattering

Monomers

Nuclear magnetic resonance

Nuclear magnetic resonance spectroscopy

Dendronized polymers

End-to-end distances

Molecular dynamics simulations

Poly(phtalimidoalkyl methacrylate)

Radius of gyration

Spacer groups

Molecular dynamics