

## Assessment of Green Dendritic Hyperbranched Nanocomposites Viscosity Index Improvers in One Pot Step

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**Abstract :** Green nano-branched structural compounds were synthesized by adding 1% by weight of clay nanoparticle to different moles ratios of either dodecyl acrylate or triethylenetetramine using a simple one-pot method. The synthesized nano polymers were provided with different terminations. In order to confirm the chemical structure of the produced nanocomposites, FTIR and <sup>1</sup>HNMR spectroscopy were performed. Additionally, Dynamic Light Scattering (DLS) analysis was used to assess the size and dispersion of the produced branching nano polymers. Using a Gel-permeation chromatograph, the molecular weights of the produced modified green nano hyperbranched polymer with various terminations were determined. the prepared nano samples with different molar feed ratios dodecyl acrylate: triethylenetetramine (DDA: TETA) was designed as An, Bn, Cn, Dn and En. Moreover, the synthesized compounds are expressed as viscosity index improvers (VII); The VI rises when prepared additive concentrations in the solution improve, as does the VI as prepared hyperbranched polymers' triethylenetetramine content rises, and the most effective VI is (E). All of the synthesized green hyperbranched nanocomposites have Newtonian rheological behavior as their rheological behavior.

**Keywords :** green hyperbranched polymer, DLS, viscosity index improver, Michael addition, nano clay

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