



Synthesis and second-order nonlinear optical properties of a crosslinkable functionalized hyperbranched polymer

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| Résumé en anglais | <p>A new implementation of copper-free thermal Huisgen 1,3-dipolar crosslinking reaction into a high T_g hyperbranched polyimide polymer in order to stabilize the electro-optic (EO) activity of second-order non linear materials is reported. Towards this goal, two different synthetic approaches were explored. The first strategy is based on the post-functionalization of the polymer with mixtures of DR1 azido derivative and propargylic alcohol, whereas, the second consists in the preparation of two complementary functionalized hyperbranched polymers that are mixed just before the preparation of films. Materials exhibit good second-order nonlinear optical coefficients (d_{33}) close to 30 pm/V at the fundamental wavelength of 1064 nm. Moreover, the thermal stability of the NLO properties of these materials reaches temperatures as high as 150°C, and probably higher. This represents the highest thermal stability of crosslinkable EO polymers based on the crosslinking Huisgen reaction.</p> |
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Liens

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