TITLE: Process for realization of polymeric materials with second order nonlinear electro-optical properties and electro-optical devices made with said material

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Abstract

The present invention relates to a process for realization of polymeric materials with second order nonlinear electro-optical properties, comprising mixing and isolation of bi- or tri-isocyanate NLO chromophores; reacting the NLO chromophores with reactive substances composed of formamides and/or acylamides, in order to obtain a prepolymer mixture; coating of said prepolymer mixture on a substrate and evaporation of solvents; cross-linking and poling of a thin layer on the substrate, by means of heating and application of an electric field, in order to obtain a cross-linked and poled thin layer; cooling of said thin layer at ambient temperature maintaining the applied poling electric field; and switching off the poling electric field. The invention also relates to a process for the realization of an electro-optical device by definition of optical paths and driving electrodes in a polymeric material with second order nonlinear properties. The material of the invention has the NLO activity comparable to lithium niobate and remarkable temporal stability.