



Second harmonic generation and photochromic grating in guest-host polymer system containing azo amide chromophores

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Auteur	Marański, Krzysztof [1], Kucharski, Stanislaw [2], Ortyl, Ewelina [3], Janik, Ryszard [4], Nunzi, Jean-Michel [5], Ahmadi-Kandjani, Sohrab [6], Barille, Régis [7]
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Résumé en anglais	The azo sulfonamide chromophores containing long aliphatic chain were used as active nonlinear optical (NLO) materials in films prepared by spin-coating on glass surfaces. The sulfonamides were: N-{4-[4-(pyrimidin-2-ylamino)sulfonyl]phenyl} diazenyl} phenyl} decanamide (Amid P); N-{4-[4-(1,3-thiazol-2-ylamino)sulfonyl]phenyl} diazenyl} phenyl} decanamide (Amid T) and N-{4-(4-nitrophenyl)-diazényl}-phenyl}undec-10-enamide (Amid N). The host matrix was a copolymer of methyl and butyl methacrylate. The formation of diffraction grating by the guest-host system was successful only in the case of Amid N. The pitch and amplitude of the grating was 930 nm and ca. 45 nm, respectively. Quantum chemical calculations revealed that the chromophores were moderate NLO-fores showing static beta values of ca. 110-130 m(4)/V. Two procedures were involved to align chromophores to determine first order NLO susceptibility: a) corona poling, and b) all-optical poling. The NLO coefficient d(33) determined in corona poled film was 25.2, 28.6 and 93.2 pm/V for Amid P, T and N, respectively.
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Liens

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