



Microcrystalline Bi₂ZnB₂O₇-polymer composites with silver nanoparticles as materials for laser operated devices

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Auteur	Majchrowski, Andrzej [1], Wojciechowski, A. [2], Jaroszewicz, L. R [3], Chrunik, M. [4], Fedorchuk, A. O [5], Sahraoui, Bouchta [6], Kityk, I. V [7]
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Résumé en anglais	<p>A novel type of composite for optoelectronic which is operated by second harmonic generation in the Bi₂ZnB₂O₇ crystallites (with sizes varying within 1–30 μm) and Ag nanoparticles (NP) embedded in PMMA polymer composites is proposed. The substantial influence of the Ag NP on the bicolor induced second harmonic generation was established. The phototreatment was performed by bicolor beams of nanosecond Nd:YAG laser (1,064/532 nm) at angles between the fundamental and photoinducing beams varying within the 19°–21° range. The studies of the corresponding dependences of the SHG during illumination by the two coherent beams at 1,064/532 nm showed a maximal enhancement of the output SHG for the Ag NP average sizes equal to about 40 nm. The role of the excited plasmons may be here crucial. Additionally the time shift between the fundamental and the doubled frequency beam maxima was found, which shows strong sensitivity to illumination. The established time shift is sensitive to the pumping power.</p>
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- [4] [http://okina.univ-angers.fr/publications?f\[author\]=20801](http://okina.univ-angers.fr/publications?f[author]=20801)

- [5] [http://okina.univ-angers.fr/publications?f\[author\]=4438](http://okina.univ-angers.fr/publications?f[author]=4438)
- [6] <http://okina.univ-angers.fr/bouchta.sahraoui/publications>
- [7] [http://okina.univ-angers.fr/publications?f\[author\]=20804](http://okina.univ-angers.fr/publications?f[author]=20804)
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