



Picosecond nonlinearity of GeO₂-Bi₂O₃-PbO-TiO₂ glasses at 532 and 1,064 nm

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Titre	Picosecond nonlinearity of GeO ₂ -Bi ₂ O ₃ -PbO-TiO ₂ glasses at 532 and 1,064 nm
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Auteur	Besse, Valentin [1], Fortin, Alexandre [2], Boudebs, Georges [3], Valle, Paula S [4], Nalin, Marcelo [5], de Araújo, Cid B [6]
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Résumé en anglais	<p>The third-order optical properties of GeO₂-Bi₂O₃-PbO-TiO₂ glasses at 532 nm and 1,064 nm were studied to evaluate their potential for optical limiting and all-optical switching. The Z-scan technique was used to determine the nonlinear (NL) refractive index, n_2, and the NL absorption coefficient, a_2, of samples with different amounts of the constituent oxides. Values of $n_2 = 0.7 \times 10^{-14} \text{ cm}^2/\text{W}$ at 1,064 nm and $= 1.5 \times 10^{-14} \text{ cm}^2/\text{W}$ at 532 nm were measured. The NL absorption coefficient, a_2, was smaller than the minimum that our apparatus can measure ($< 0.01 \text{ cm}/\text{GW}$) in the near-infrared (1,064 nm); in the visible region (532 nm), we obtained $a_2 = 4.4 \text{ cm}/\text{GW}$. The set of NL parameters measured indicates the potential usefulness of the GeO₂-Bi₂O₃-PbO-TiO₂ glasses for all-optical switching at 1,064 nm and for optical limiting at 532 nm.</p>
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- [1] <http://okina.univ-angers.fr/vbesse/publications>
- [2] [http://okina.univ-angers.fr/publications?f\[author\]=10440](http://okina.univ-angers.fr/publications?f[author]=10440)
- [3] <http://okina.univ-angers.fr/g.bou/publications>
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=10441](http://okina.univ-angers.fr/publications?f[author]=10441)
- [5] [http://okina.univ-angers.fr/publications?f\[author\]=10442](http://okina.univ-angers.fr/publications?f[author]=10442)
- [6] [http://okina.univ-angers.fr/publications?f\[author\]=8609](http://okina.univ-angers.fr/publications?f[author]=8609)
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