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Title:Optical properties of non-linear crystal grown from the melt GaSe-AgGaSe₂

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Abstract:Modified GaSe single crystal was grown from the melt with charge composition GaSe+10 mass% of AgGaSe₂. Lattice structure, visible to mid-IR and further THz range optical properties, as well as Raman spectra were studied in details. The grown crystal was identified as ϵ -GaSe:Ag (0.04 mass%). This silver content in GaSe has resulted in 6% decreased non-linearity that was over compensated in CO₂ laser SHG efficiency by vanished of bulk damages and 10-20% improved surface damage threshold. About 30% increased microhardness is promising for cut and polishing at arbitrary direction and ϵ -GaSe:Ag applications in out-of-door systems. © 2012 Elsevier B.V.

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Main heading:Silver

Controlled terms:Carbon dioxide - Crystal growth - Doping (additives) - Optical properties

Uncontrolled terms:Arbitrary direction - Bulk damages - Charge composition - GaSe - Grown crystals - Lattice structures - Nonlinear crystals - Optical properties - SHG efficiency - Silver content - Surface damages

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