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Amir Khabbazi Oskouei

Sebastian Baur

Luke Emmert

Wolfgang Rudolph

Marco Jupé

See next page for additional authors

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Presenter Information

Amir Khabbazi Oskoueji, Sebastian Baur, Luke Emmert, Wolfgang Rudolph, Marco Jupé, Thomas Willemsen, Morten Steinecke, Lars Jensen, and Detlev Ristau

Femtosecond laser-induced modifications of frequency tripling mirrors

Amir Khabbazi Oskouei, Sebastian Baur, Luke Emmert, and Wolfgang Rudolph

Dept. Physics and Astronomy, University of New Mexico, Albuquerque, NM 87131 (USA)

Marco Jupé, Thomas Willemsen, Morten Steinecke, Lars Jensen, and Detlev Ristau

Laser Zentrum Hannover e.V. (Germany)

It is well known that dielectric materials change their properties during irradiation by (high-power) lasers. While in some cases this is desirable and used for laser conditioning, in many cases these material modifications need to be avoided or minimized to maintain the function of optical elements, like mirrors and beam splitters.

Recently dielectric stacks have been proposed as nonlinear optical elements for frequency conversion and switches. These dielectric multi-layer coatings are exposed to large incident intensities, which may lead to permanent refractive index changes. We characterize material modifications of a frequency tripling mirror to assess their impact on conversion efficiency and to suggest mitigation measures.