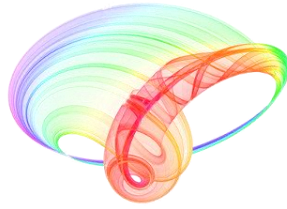


Book of abstracts



PHOTONICA2017

The Sixth International School and Conference on Photonics

& COST actions: MP1406 and MP1402



&H2020-MSCA-RISE-2015 CARDIALLY workshop



28 August – 1 September 2017

Belgrade, Serbia

Editors

Marina Lekić and Aleksandar Krmpot

Institute of Physics Belgrade, Serbia

Belgrade, 2017

ABSTRACTS OF TUTORIAL, KEYNOTE, INVITED LECTURES,
PROGRESS REPORTS AND CONTRIBUTED PAPERS

of

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Technical assistance

Marko Nikolić and Danica Pavlović

Publisher

Institute of Physics Belgrade
Pregrevica 118
11080 Belgrade, Serbia

Printed by

Serbian Academy of Sciences and Arts

Number of copies

300

ISBN 978-86-82441-46-5

Effects of nanosecond laser pulses at 248 nm wavelength on multilayer CrN/(Cr,V)N coatings

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The effects of UV nanosecond laser pulses on multilayer CrN/(Cr,V)N coatings were studied. In the experiment laser irradiation was performed in air at 248 nm wavelength and pulse duration of 25 ns. The surface composition and microstructure was analyzed depending on the initial content of vanadium in the coatings and number of accumulated laser pulses at a fluence of 0.17 Jcm⁻². Most of the absorbed laser energy was rapidly transformed into heat, producing intensive modifications of the composition and morphology of the multilayer structure. The result has shown that concentration of metallic components was homogeneously distributed inside the coatings. However, on the surface and in the sub-surface regions the contents of Cr and V were decreased due to oxidation. The composition and thickness of created mixture of oxides Cr₂O₃ and V₂O₅ depend on the number of laser pulses and initial V content. Laser induced surface morphology changes of the multilayer CrN/(Cr,V)N coatings were registered at the irradiation areas: (i) grainy structures at peripheries, (ii) cracks and (iii) irregular closed shapes in the center.