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Advanced Manufacturing Technologies for Micro- and Nanosystems in Security and Defence II

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Editors

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Introduction

The second edition of the conference Advanced Manufacturing Technologies for Micro- and Nanosystems in Security and Defence was held in Strasbourg, France, 9-10 September 2019, within the framework of SPIE Security + Defence 2019. The conference aims to establish a platform for the most innovative and advanced manufacturing technologies, which can have an impact on the fabrication of photonic and optoelectronic devices for security and defense applications. In this context, there is an increasing interest in novel manufacturing technologies which might enable the fabrication and assembly of devices by autonomous systems, capable of operating in harsh and hostile environments, possibly by remote control. The emerging 3D printing technologies and self-assembly nanotechnologies in combination with smart and functional materials can provide interesting new routes towards self-assembling, self-repairing and self-powering devices for defence and security.

The conference's two days of technical sessions gave us an updated overview of the state-of-the-art of the most advanced manufacturing technologies for photonic and optoelectronic devices, which included high resolution 3D printing technologies, electrospinning, additive manufacturing of optical components, 4-dimensional printing, surface patterning and treatment, solid state lasers and novel application of electrospun fibers.

This volume highlights the papers presented at the conference, which include the use of ultrashort ring-airy laser beams for the fabrication of 3D structures on large areas with high resolution by using multiphoton polymerization and the treatment of optical surfaces by plasma chemical vaporization machining. In addition, DNA-based nanofabrication approaches are reviewed and demonstrated to be a valuable tool for high resolution patterning.

The conference chairs acknowledge all authors for their contributions to the symposium. Special thanks go to the members of the Program Committee for their valuable contribution and to the invited speakers for their exciting and inspiring presentations. We also thank the SPIE staff for their efforts and outstanding service in preparing the conference and publishing the proceedings.

Andrea Camposeo
Luana Persano