## PROCEEDINGS OF SPIE

## Nonlinear Optics and Applications XII

Mario Bertolotti Anatoly V. Zayats Alexei M. Zheltikov Editors

19-23 April 2021 Online Only, Czech Republic

Sponsored by SPIE

Cooperating Organisations
ELI Beamlines (Czech Republic)
Laserlab Europe
European Optical Society
HiLASE Centre (Czech Republic)

Published by SPIE

**Volume 11770** 

Proceedings of SPIE 0277-786X, V. 11770

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings: Author(s), "Title of Paper," in *Nonlinear Optics and Applications XII*, edited by Mario Bertolotti, Anatoly V. Zayats, Alexei M. Zheltikov, Proc. of SPIE 11770, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510643741

ISBN: 9781510643758 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2021 Society of Photo-Optical Instrumentation Engineers (SPIE).

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.



Paper Numbering: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

## **Contents**

	PLASMONICS
11770 05	Chiral nanosurfaces for enhancement of local electromagnetic field [11770-2]
	NONLINEARITIES
11770 0D	High-intensity light bullets at the competition of quadratic and cubic nonlinearities [11770-10]
11770 OE	Generation of stable "dancing" two-component optical bullets [11770-11]
11770 0G	Silicon metasurfaces with bound states in the continuum for high-harmonic generation [11770-13]
	RAMAN
11770 OK	Generation of terahertz signal by photomixing Kelly sidebands of mode-locking fiber laser [11770-17]
11770 OL	Features of the dynamics of Bragg gratings inscription with femtosecond radiation [11770-18]
11770 ON	Femtosecond laser reconstruction of graphene field effect transistor [11770-20]
	QUADRATIC MATERIALS
11770 OP	Design study of efficient far-UVC second-harmonic generation using an integrated approach [11770-22]
11770 OQ	Thermal influence on laser self-injection locking to nonlinear microresonator [11770-23]
11770 OR	Mode-locking features in a sub-200-fs erbium-doped all-fiber laser based on high-density well-aligned single-walled carbon nanotubes [11770-24]
	MATERIALS
11770 OS	Harmonic generation at the nanoscale in strategic materials for nanophotonics (Keynote Paper) [11770-25]

11770 OX	Harmonic generation from gold nanolayers: bound and hot electron contributions [11770-30]
11770 OY	Enhanced second-harmonic generation by single metal-insulator multilayered nanocavities with axial symmetry resonating in the near-infrared [11770-31]
11770 OZ	Second harmonic generation in colloidal solution of heterostructured CdSe/CdS quantum wells [11770-32]
11770 10	Peculiarities of exciton interaction and relaxation in colloidal CdSe/CdS nanoplatelets [11770-33]
	APPLICATIONS
11770 13	Reservoir computing with optical solitons [11770-36]
11770 14	Adaptive camera calibration for a focus adjustable liquid lens in fiber optic endoscopy [11770-37]
11770 15	Surface enhanced Raman scattering of crystal violet [11770-38]
11770 16	Fixed-point realisation of fast nonlinear Fourier transform algorithm for FPGA implementation of optical data processing [11770-39]
11770 17	Versatile supercontinuum generation by using $\chi^{(2)}$ and $\chi^{(3)}$ nonlinearities in PPLN crystal for direct multiplex CARS measurement [11770-40]
11770 18	Analogue cosmology: using techniques from nonlinear optics to study modified theories of gravity with non-minimal coupling between curvature and matter [11770-41]
11770 19	High-resolution mid-MIR spectrally resolved interferometry [11770-42]
11770 1C	Random fiber laser with switchable repetition rate [11770-45]
	POSTER SESSION
11770 11	Nonlinear photoionization of supersonically expanded molecular pulses of iodomethane (CH <sub>3</sub> I) [11770-51]
11770 1K	Dual-frequency narrowband CW fiber laser implementing self-injection locking of DFB laser diode and Brillouin lasing in a single ring cavity [11770-53]
11770 1L	Peculiar features of surface plasmon-polariton modulation instability in a metal film with varying thickness [11770-54]
11770 1M	Microwave signal generation with a dual-frequency self-injection-locked DFB laser [11770-55]

11770 1N	Stable harmonic mode locking in soliton fiber laser with frequency shift: theory and experiment [11770-56]
11770 10	Oscillations of photocurrent signals upon photoionization of polarized Ar and Xe atoms in magnetic fields [11770-57]
11770 1P	Photoinduced trap passivation for enhanced photoluminescence in 2D organic-inorganic hybrid perovskites [11770-58]
11770 1Q	Excitation of a bound state in the continuum in nonlinear systems from the far field [11770-59]
11770 1R	Barkhausen conditions and starting of an optoelectronic oscillator [11770-60]
11770 1S	Investigation of the level of uncertainty given by Brillouin light scattering [11770-61]
11770 1T	Theorical calculations on nonlinear optical properties of choline chloride-urea deep eutectic solvent [11770-62]
11770 1U	Superfluid effects in defocusing nematic liquid crystals [11770-63]
11770 1V	Exploring quantum-like turbulence with a two-component paraxial fluid of light [11770-64]
11770 1W	Optical limiting properties of J-type dimeric phthalocyanine Cu and optical switching based on spatial self-phase modulation [11770-65]
11770 1X	Interferometric Z-scan method for thermo-optical effect studies [11770-66]