

Optics in 2019

This special issue of *Optics & Photonics News* highlights exciting peer-reviewed optics research that has emerged over the past year.

Our panel of editors reviewed 91 summaries of work by researchers from around the world. They selected for publication 30 stories that they felt communicated breakthroughs of particular interest to the broad optics community. Some of the summaries have related multimedia that you can access at www.osa-opn.org/optics-in-2019. OPN thanks all who submitted summaries, as well as our panel of guest editors.

PANEL CHAIR: Robert D. Guenther, *Duke University, USA*

GUEST EDITORS: Felipe Beltrán-Mejía, *Instituto Nacional de Telecomunicações, Brazil*; Svetlana Boriskina, *Massachusetts Institute of Technology, USA*; Rocío Borrego-Varillas, *Consiglio Nazionale delle Ricerche-IFN, Italy*; Alvaro Casas Bedoya, *University of Sydney, Australia*; Mihaela Dinu, *LGS Innovations, USA*; Alexandre Fong, *TruTag Technologies, USA*; G. Groot Gregory, *Synopsys Inc., USA*; Brooke Hester, *Appalachian State University, USA*; Giovanni Milione, *NEC Laboratories America, USA*; Arlene Smith, *Avo Photonics Inc., USA*; Joel Villatoro, *University of the Basque Country, Spain*; Stephen R. Wilk, *Xenon Corp., USA*

SUMMARIES

- 32** Fractal light from lasers
- 33** Human-like algorithm for passive MLFL
- 34** Optical-tweezer phonon laser
- 35** Nonreciprocal forces on trapped nanoparticles
- 36** Deep learning for particle tracking
- 37** Light-guiding in red blood cell suspensions
- 38** UV-localized mid-IR photoacoustic microscopy
- 39** A quantum edge for image-scanning microscopy
- 40** Toward a quantum plasmonic immunoassay
- 41** Controlling optics with thermo-plasmonics
- 42** Cluster states go high-dimensional
- 43** Frequency-domain quantum information processing
- 44** Quantum interference across astronomical distance
- 45** Interferometry beyond the quantum limit
- 46** Quantum photonic metamaterials
- 47** Nonlinear localization via PBGP
- 48** Reconfigurable metalenses on nanoparticle lattices
- 49** Low-loss porous optical components
- 50** Solving equations with metamaterials
- 51** Metasurfaces for valleytronics
- 52** Expanding discrete optics with Mathieu beams
- 53** Pin-like optical beams to penetrate turbulence
- 54** Lithium niobate goes nano
- 55** 3-D integrated diamond photonics
- 56** Integrated microwave photonics meets daily life
- 57** Non-Hermitian origin of surface EM waves
- 58** Near-field unidirectional excitation ... and beyond
- 59** Combining the Malus and Beer-Lambert laws
- 60** Nulling interferometry for exoplanet studies
- 61** Femtosecond FIBS for detecting explosives