

# Frontiers in Optics + Laser Science 2025

## Session Guide

**Disclaimer:** this guide is limited to technical program with abstracts and author blocks as of 22 October. For updated and complete information with special events, reference the online schedule or mobile app.

Marrujo<sup>1</sup>; <sup>1</sup>*Guanajuato Univ., Mexico*; <sup>2</sup>*Centro de Investigaciones en Óptica, Mexico*. An easy-to-construct, all-fiber, modal analysis-based, directional torsion sensor, insensitive to strain and temperature, fabricated with tapered capillary hollow core fiber (CHCF), is proposed and experimentally demonstrated

### JW5A.11

**Focusing Cavity-Resonator-Integrated Guided-Mode Resonance Filter for Ultra-Compact CWDM Light Source**, Keisuke Ozawa<sup>1</sup>, Keisuke Sakatani<sup>1</sup>, Kenji Kintaka<sup>2</sup>, Junichi Inoue<sup>1</sup>, Shogo Ura<sup>1</sup>; <sup>1</sup>*Kyoto Inst. of Technology, Japan*; <sup>2</sup>*National Inst. of Advanced Industrial Science and Technology, Japan*. A wavelength-selective retroreflector based on guided-mode resonance for transverse-magnetic-polarized diverging wave is shown for the first time. Two-dimensional grating is used to control reflection bandwidth. The retro-reflectance of 56% is estimated by a numerical simulation.

### JW5A.12

**Beyond the optical amplification on C-band via a short tri-doped tellurite fiber**, Danilo H. Spadoti<sup>1</sup>, Iago C. Pinto<sup>2</sup>, Victor A. Rivera<sup>3</sup>, Younès Messaddeq<sup>2</sup>; <sup>1</sup>*IESTI, Universidade Federal de Itajubá, Brazil*; <sup>2</sup>*Centre d'Optique Photonique et Lasers, Pavillon d'Optique-Photonique,, Laval Univ., Canada*; <sup>3</sup>*Instituto de Física de São Carlos, USP, Brazil*. This paper presents enhanced emission intensity and spectral broadening across the C-, L-, and U-telecommunication bands in a 30 cm multimode tri-doped tellurite fiber.

### JW5A.13

**High-Sensitivity Temperature Detection via Polycarbonate-Coated Fiber Bragg Gratings**, Saikat Mondal<sup>1</sup>, Partha Roy Chaudhuri<sup>1</sup>; <sup>1</sup>*Indian Inst. of Technology Kharagpur, India*. We present a high-performance temperature sensor utilizing fiber Bragg grating coated with elastomeric polycarbonate, resulting in enhanced sensitivity (0.058 nm/°C) attributed to its significant thermal expansion, with sensitivity affected by the coating radius.

### JW5A.14

**Polarization-Dependent Interference in an Asynchronous Dual-Polarization Power Division Multiplexing Scheme**, Meredith Caveney<sup>1</sup>, C. Alex Kaylor<sup>1</sup>, Stephen E. Ralph<sup>1</sup>; <sup>1</sup>*Georgia Inst. of Technology, USA*. We propose a flexible dual-polarization analog power division multiplexing scheme with variable baud rates and power ratios. We demonstrate how polarization mismatch, OSNR, baud rate, and power ratio together impact BER under full spectral overlap.

### JW5A.15

**Quantum Random Number Generation From Fiber Guided Single Photons**, Muhammed S. Kodakkaden<sup>1</sup>; <sup>1</sup>*Qatar Centre for Quantum Computing, College of Science and Engineering, Hamad Bin Khalifa Univ., Qatar*. We demonstrated a QRNG using single photons from a quantum dot coupled to an optical nanofiber. The system generates certified random bits through path-encoded qubit states verified by NIST statistical tests.

### JW5A.16

**Applicability of Neon Eye Tracking System in Highly Digitalized Work Environments**, Tatjana Pladere<sup>1</sup>, Linda Krauze<sup>1</sup>, Aiga Svede<sup>1</sup>, Reinis Alksnis<sup>2</sup>, Henrijs Kalkis<sup>3,4</sup>, Zenija Roja<sup>4</sup>, Jevgenijs Viznuks<sup>4</sup>; <sup>1</sup>*Department of Optometry and Vision Science, Univ. of Latvia*,