IEEE/Optica Publishing Group
Journal of Lightwave Technology
Scope and Topic Categories

The Journal of Lightwave Technology (JLT) is comprised of original contributions covering work in all aspects of optical guided-wave science, technology and engineering. Manuscripts are solicited which report original theoretical and/or experimental results which advance the technological base of guided-wave technology and related applications.

Topics of interest include the following: fiber and cable technologies, active and passive guided-wave componentry (light sources, detectors, repeaters, switches, fiber sensors, etc.); integrated optics and optoelectronics; and systems, subsystems, new applications and unique field trials.

JLT focuses on science, technology, and engineering of guided-wave technologies and not primarily on fundamental studies on the interaction of light with matter such as quantum optics, biomedical, nonlinear optics, and laser physics.

More information about the main topic categories and their related scope can be found in the following sections.

I. Systems, subsystems and networks for fiber optics communications

Manuscripts in the optical systems and subsystems area should be concerned with demonstrations that render a performance level not previously available, significantly out-perform previously established systems, clearly go beyond incremental improvement of previously published results, or represent enhancements in the state of the art in general.

Submissions in the field of optical networks are welcome if they show a significant improvement over state-of-the-art network operation and performance. All assumptions on the underlying physical layer must be realistic and must be substantiated through explicit references or through detailed technical descriptions within the paper itself. Papers that focus on networking aspects regardless of the underlying physical light-paths are not suitable for publication in JLT.

JLT puts a significant emphasis on experimental work, system demonstrations and subsystems measured performance. Submissions with technical content consisting mainly of simulations and theoretical derivations and estimates are welcome too, if they go beyond a simple performance optimization and use realistic parameters, possibly extracted from experiments or other experimental papers. Simulation, or theoretical manuscripts that are focused on derivations for the sake of derivations, disconnected from real-world operation limitations, or representing an incremental improvement of already published work, are not suitable for publication in JLT.

II. Microwave photonics, radio-over-fiber and optical wireless systems

Papers in this category should demonstrate significant advances over prior publications in the field and provide relevant references to that work. Submissions with technical content consisting mainly of simulations and theoretical derivations and estimates need to go beyond a simple performance optimization and use realistic parameters, possibly extracted from experiments or other experimental papers.

Submissions on the field of optical wireless systems covering purely theoretical expositions with little to no connection to practical systems in terms of their underlying assumptions and without any context to experimental work are not suitable for publication in JLT.

III. Optical Waveguides and Devices

The primary subject of the papers in the area of optical waveguides and devices must be related to fiber or waveguide technologies. Papers on purely free-space optical subsystems/devices are generally not suitable for JLT, unless these uniquely enable a function used in guided-wave systems.

Submissions with technical content consisting mainly of simulations and theoretical derivations and estimates should either propose a novel structure that is in principle feasible and that would provide a clear advantage over conventional ones, or shed important fundamental insight into the principles and trade-offs of known structures. In both cases, the work should go beyond a simple performance optimization and use realistic parameters, possibly extracted from experiments or other experimental papers. In addition, the scenario in which the proposed device is supposed to operate should be clearly explained, taking into account real-world operation limitations (such as noise, crosstalk etc.).

IV. Optical Fibers and Fiber Devices

Papers in the category of optical fibers and fiber devices must demonstrate enough novelty in terms of structure, mode of operation, or performance improvement over state-of-the-art results. As an example, reports on a fiber laser that is mode-locked using some novel saturable absorber, but whose laser performance is not superior or does not show any noteworthy benefits, are not suitable for publication in JLT.

Submissions with technical content consisting mainly of simulations and theoretical derivations and estimates are welcome if they either propose a structure that is in principle feasible or if they shed important fundamental insight into the principles and trade-offs of known structures (beyond a simple performance optimization and using realistic parameters, possibly extracted from experiments or other experimental papers).

V. Optical Sensors

The primary subject of the papers in the area of optical sensors must be related to optical fibers or waveguide technologies. Papers in this category must exhibit significant novelty from the perspective of waveguide physical science, waveguide device concept, and/or waveguide-based sensor performance. In addition, highly innovative and enabling signal interrogation and sensor packaging methods for waveguide-based sensors will also be considered for publication in the JLT. Sensing and measurement principles, which do not utilize or advance waveguide sensing technologies, are deemed unsuitable for the JLT. For example, sensor submissions based on free-space light propagation, metasurface-based

sensors, or those submissions where an optical fiber is used only as a feeder to the sensing system are not considered suitable for publication in JLT. Papers demonstrating the use of known sensing technology in a new application, without any advances on the sensor itself, are also not considered suitable for publication in the JLT. Besides significant advancements over the existing state-of-the-art, a solid application potential is expected for all newly proposed sensor system concepts. For example, proposed concepts shall not exceed manufacturing or system design complexity in a way that would compromise their application potential.

Experimental verification and evaluation of the proposed sensor or sensing system is required predominantly in JLT publications. This verification shall include the key relevant sensing system's performance parameters, for example, experimentally determined measurement resolution or measurement of the system's spectral noise characteristics, repeatability and linearity of the sensor's static characteristics, measurement range, temperature cross-sensitivity, system bandwidth, sensor reproducibility, calibration complexity, and others. A complete experimental sensor performance verification is essential for all submissions demonstrating designs with improved or advanced sensing performances. Sole improvement of intermittent sensor's characteristics, such as the sensor's spectral sensitivity, without experimental demonstration of a significant advancement of measurement performance parameters, will be deemed insufficient to merit publication in the JLT.

Theoretical works in the sensor area can be considered for publication in the JLT only in exceptional cases, when presenting new and fundamental waveguide sensing concepts or principles. The reasons for not providing experimental verification must be explained clearly in the manuscript and the cover letter.

Submissions reporting the application of machine learning/artificial intelligence algorithms to optical sensing will be considered only in cases when significant advances in physics or engineering are provided. Manuscripts describing enhancement of the existing and well know sensing concepts by data processing algorithms are deemed not suitable for publication in the JLT scope.