Call for Papers

IEEE Journal of Selected Topics in Quantum Electronics

Special issue on

Advances in Semiconductor Surface-emitting Lasers: VCSELs and PCSELs

Scope and Topics

IEEE Journal of Selected Topics in Quantum Electronics (JSTQE) invites manuscript submissions in "Advances in Semiconductor Surface-emitting Lasers: VCSELs and PCSELs".

VCSELs have a variety of features, such as their ultra-compact size, low power consumption, high-speed operation, and high-power operation when arranged in an array. They are currently in practical use in a wide range of applications, including optical interconnects, optical sensing, and laser printers, while active research is still being conducted to further improve their performance, such as by increasing the number of junctions to improve efficiency and expanding the wavelength range.

On the other hand, PCSELs are a new type of surface-emitting lasers that have the unique advantage of being able to achieve both high-power and high-beam-quality operation, as well as advanced functionalities such as beam scanning. Recently, research and development of PCSELs has been rapidly progressing around the world, and social implementation for various cutting-edge applications has also commenced.

In light of the above-mentioned current status of VCSELs and PCSELs, the purpose of this issue of JSTQE is to highlight the recent progress of semiconductor surface-emitting lasers that possess either horizontal or vertical cavity. For either cavity geometry, researchers seek similar or different approaches for scaling up the laser output power, increase the modulation rate, or increasing the laser functionality. Topics of interest for both VCSELs and PCSELs include (but are not limited to):

- high power and high-beam quality performance
- high-speed modulation performance
- high wall-plug efficiency and power scaling
- creation of incoherent or coherent arrays
- beam-steering and novel beam formation
- emerging applications for surface-emitting lasers including LiDAR and free-space communication

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Submission Guidelines
Submissions will be reviewed in accordance with the normal procedures of the Journal and papers must be formatted according to the Information for Authors found at:
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- Manuscript and Graphical Abstract Submissions should be made online at https://ieee.atyponrex.com/journal/jstqe-pho**.** Graphical abstracts are strongly suggested.
- Select the paper type "**Special Issue on Advances in Semiconductor Surface-emitting Lasers: VCSELs and PCSELs**"

Important Dates
Open for Submissions: August 1, 2025
Submission Deadline: May 1, 2026
Tentative Publication: November/December 2026
EARLY ACCESS: *DOI-citable articles will be published online after acceptance upon submission of final files and rights selection – sometimes well in advance of issue publication*.

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