

CALL FOR PAPERS

IEEE Journal of Selected Areas in Sensors Special Section on

**Heterogeneous Integration, Advanced
Packaging and Reliability for Intelligent
Sensor Systems**

Intelligent sensor systems are transforming a wide range of applications including autonomous vehicles, industrial Internet of Things (IIoT), healthcare, robotics, smart manufacturing, aerospace, consumer electronics, and edge artificial intelligence. Recent advances in heterogeneous integration, advanced packaging, and system-level integration have significantly enhanced the performance, functionality, miniaturization, and energy efficiency of modern sensor systems. Technologies such as System-in-Package (SiP), chiplet integration, wafer-level packaging, fan-out packaging, hybrid bonding, embedded packaging, and advanced interconnection are enabling highly integrated sensor platforms that combine sensing, computing, communication, and power management within compact architectures. At the same time, packaging has become a critical determinant of sensor performance, operational stability, and lifetime. Addressing challenges related to thermo-mechanical stress, material degradation, environmental loading, interconnect failures, and multi-physics interactions is essential for developing reliable intelligent sensor systems. **The primary focus of this Special Section is on heterogeneous integration, advanced packaging, and reliability technologies specifically enabling sensor systems and intelligent sensing applications, with emphasis on their impact on sensor performance, functionality, and long-term reliability.**

It is intended that this Special Section of **IEEE Journal of Selected Areas in Sensors (JSAS)** will show the state-of-the-art in **heterogeneous integration, advanced packaging and reliability for intelligent sensor systems**. Original research contributions, tutorials and review papers are sought in areas related to heterogeneous sensor integration, advanced packaging, and reliability for intelligent sensing, including (but not limited to):

Areas in which papers are solicited

- Heterogeneous integration technologies for intelligent sensor systems
- Advanced packaging and System-in-Package (SiP) for sensor integration
- Chiplet, 2.5D/3D integration and hybrid bonding for intelligent sensing
- Wafer-level, fan-out and embedded packaging for sensor systems
- MEMS, optical, RF, biomedical, wearable and automotive sensor packaging
- Advanced packaging materials and interconnection technologies for sensor integration
- Reliability physics and failure mechanisms in integrated sensor systems
- Thermo-mechanical, environmental and interconnect reliability of sensor systems
- Reliability testing, qualification and lifetime prediction for intelligent sensors
- Multi-physics modeling and digital twins for intelligent sensor systems
- In-situ characterization and structural health monitoring of integrated sensors
- AI-assisted reliability assessment, prognostics and health management (PHM) for intelligent sensing

- Design-for-Reliability (DfR) and sensor-package co-design
- Emerging packaging technologies for next-generation intelligent sensor systems

Solicited and invited papers shall undergo the standard **IEEE Journal of Selected Areas in Sensors (JSAS)** peer review process. All manuscripts must be submitted on-line, via the IEEE Author Portal, see <https://ieee.atyponrex.com/journal/jsas>. When submitting, please indicate in the "Manuscript Type" roll down menu that the paper is intended for the "**Heterogeneous Integration, Advanced Packaging and Reliability for Intelligent Sensor Systems**" Special Section. Authors are particularly encouraged to suggest names of potential reviewers for their manuscripts in the space provided for these recommendations in Manuscript Central. For manuscript preparation and submission, please follow the guidelines in the **Information for Authors** at the IEEE Journal of Selected Areas in Sensors web page, <https://ieee-jsas.org/>.

Deadlines:

- **Manuscript Submission:** March 31, 2027
- **Notification of Acceptance:** June 1, 2027
- **Final Manuscript published in IEEE Xplore:** July 1, 2027
- **Tentative date of paper section:** September 2027

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