

Special Issue

Smart Pixels and Imaging

Message from the Guest Editors

The growing experience with photosensors functionality has led to the development of a large variety of modular building blocks for smart pixels and high-performance image-sensing solutions. Examples include in-pixel amplifiers and avalanche-effect pixels for single-photon resolution at room temperature (including Quanta pixels), non-linear pixel response for high-dynamic-range imagers reaching 200 dB D/R, lock-in pixels for optical time-of-flight range cameras with sub-millimeter distance resolution, high-speed pixels and sensors for image acquisition at 100 million frames per second, or OCT-imagers with in-pixel demodulation circuits for miniaturized, real-time optical coherence tomography 3D imaging systems.

These smart-pixel capabilities open the door to new high-performance photonic microsystems, either by implementing known optical measurement techniques in a more efficient way, or by realizing novel photonic sensing approaches, whose realization requires the availability of unconventional pixel and image sensing functionality at the limits imposed by physics.

Guest Editors

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