

Optoelectronic devices for neuromorphic vision sensors

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Neuromorphic visual systems have considerable potential to emulate basic functions of the human visual system even beyond the visible light region. However, the complex circuitry of artificial visual systems based on conventional image sensors, memory and processing units presents serious challenges in terms of device integration and power consumption. In this talk, I will first introduce the working mechanisms of conventional frame-based image sensors and dynamic vision sensors based on Si CMOS technologies (e.g., silicon retina). Second, we will overview recent developments in neuromorphic vision sensors with the implementation of emerging devices. These proof-of-concept devices provide the potential to simplify the circuitry of a neuromorphic visual system and contribute to the development of applications in edge computing and the internet of things.