Combining Expertise for Next Generation TEM Imaging Technology

Japan Electron Optics Laboratory Co., Ltd ("JEOL"), a leading manufacturer of semiconductor, industrial, scientific, metrology, and medical equipment, came to Scintacor Ltd with hopes of finding the ideal phosphor screen to detect electrons with high spatial accuracy to support products within their TEM segment. JEOL has always been at the forefront of SEM/TEM development, bringing the highest performance and quality products to the market. It was essential to partner with a true expert in phosphor coating in order to achieve the performance levels expected on the JEOL CMOS camera.

With a high level of collaboration between the company's development teams, the project resulted in the launch of SightSKY[1] - a high sensitivity, low noise, fiber coupling CMOS camera used with Transmission Electron Microscopes ("TEM"). With Scintacor's phosphor coating, we were able to optimise both the sensitivity and the resolution of the camera whilst keep a low noise level, allowing SightSKY to bring a new level of performance to the TEM camera market.

"Scintacor's knowledge and development capabilities were exactly what we needed to make this project a success," said Dr. Yuji Konyuba, a member of JEOL's EM R&D Department. "The phosphor screen for electron detection, that was developed, exceeded our initial project expectations, bringing the camera even greater sensitivity than what was first anticipated."

Transmission Electron Microscopy (TEM) is a microscopy technique in which a beam of electrons is transmitted through a biological specimen or sample to produce a high-resolution, magnified image. These extremely powerful microscopes allow for visualizing material structures and properties at resolutions better than 1 nanometre. Used in a variety of fields, such as life sciences, nanotechnology, biological and material research, forensic analysis, and gemology and metallurgy, TEMs provide topographical, morphological, compositional, and crystalline information about the sample. Scintacor's TEM screens convert the electron energy to detectable light for image sensing.

Andrew Lee, CTO at Scintacor remarks, "It has been a great opportunity to work with JEOL on this particular development project. In close collaboration between Scintacor and JEOL, engineers tested several potential technical options and together we determined the best process and phosphor required for JEOL's demanding and innovative design."

To learn more about Scintacor products and Services: www.scintacor.com

To learn more about Jeol products and Services: www.jeol.com

[1] https://www.jeol.com/products/scientific/tem/SightSKY_Camera.php