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HAXPES analysis of materials for electronics applications CONAN WEILAND, National Institute of Standards and Technology, PAT LYSAGHT, SEMATECH, JOSEPH WOICIK, National Institute of Standards and Technology — To continue the scaling of memory and logic devices, new materials must be employed to replace the traditional Si/SiO₂. However, detailed understanding of the chemical and electronic structures of the new materials and interfaces must be achieved for employment. X-ray photoelectron spectroscopy (XPS) is an excellent tool for studying such materials due to its unique ability to probe both the chemical and electronic structure of materials. However, XPS analysis is inherently limited by the short inelastic mean free paths (IMFPs) of the photoelectrons, limiting the probe depth to the near surface region. To overcome this limitation, XPS using hard X-rays (HAXPES) can be used, increasing the probe depth to technology relevant thicknesses. We present recent HAXPES results of materials and interfaces for electronics applications.

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