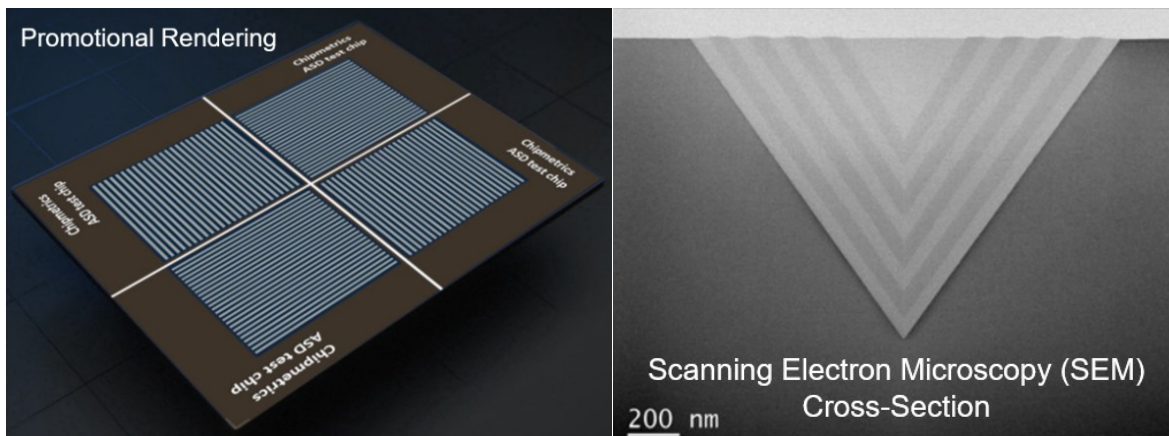


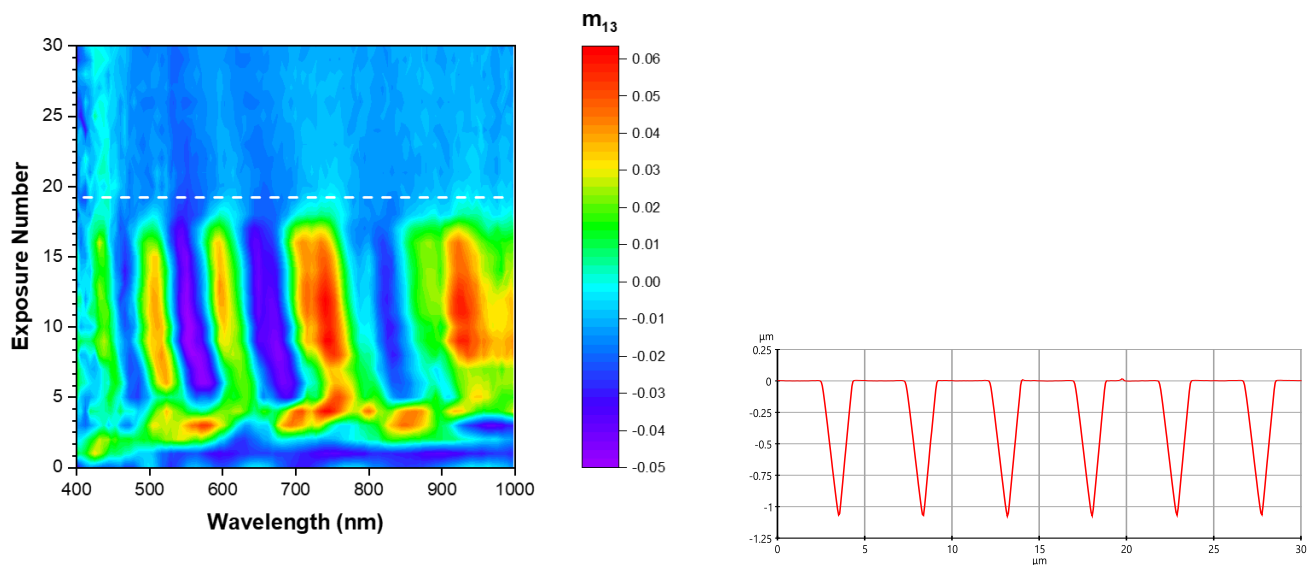
***In Situ* Scatterometry Monitoring of Selectivity in 3D Patterns during Atomic-Scale Processing**

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Promotional rendering and scanning electron microscopy (SEM) cross-section of line gratings obtained from Chipmetrics (ASD-1). V-shaped lines were wet-etched into the silicon (Si) substrate using KOH. These grooves were then filled with a stack of alternating PE-CVD-grown silicon oxide (SiO_2 in lighter tone) and silicon nitride (SiN_x in darker tone). Eventually, the structure underwent chemical-mechanical planarization (CMP) to reveal the alternating SiO_2 | SiN_x surface areas.



Left: *In situ* scatterometry data (Mueller-matrix element m_{13}) acquired with our iSE (J.A. Woollam Co.) instrument during selective etching of SiN_x and SiO_2 versus Si non-etch. The white dashed line indicates the time slice when both the SiN_x and SiO_2 materials were removed, revealing the original Si line grating.

Right: Atomic force microscopy (imaging) confirmed the bare V-shaped line profiles after etching.