

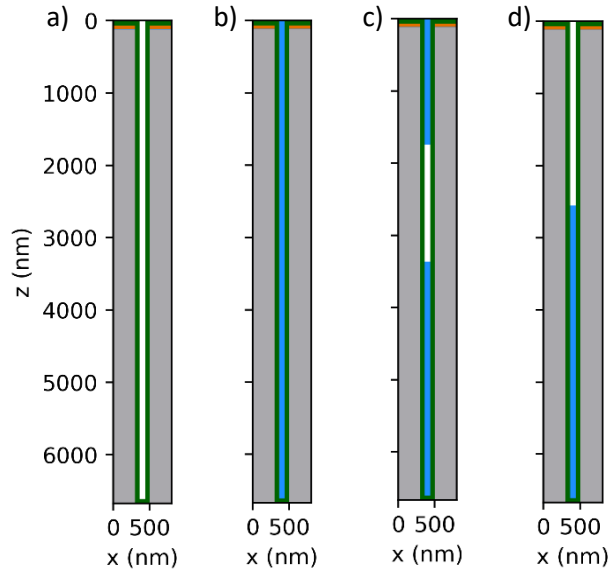


Figure 1: Cross-section of modeled HAR deep trench: (a) empty, (b) fully gapfilled, (c) gapfilled with buried void and (d) gapfilled with open void

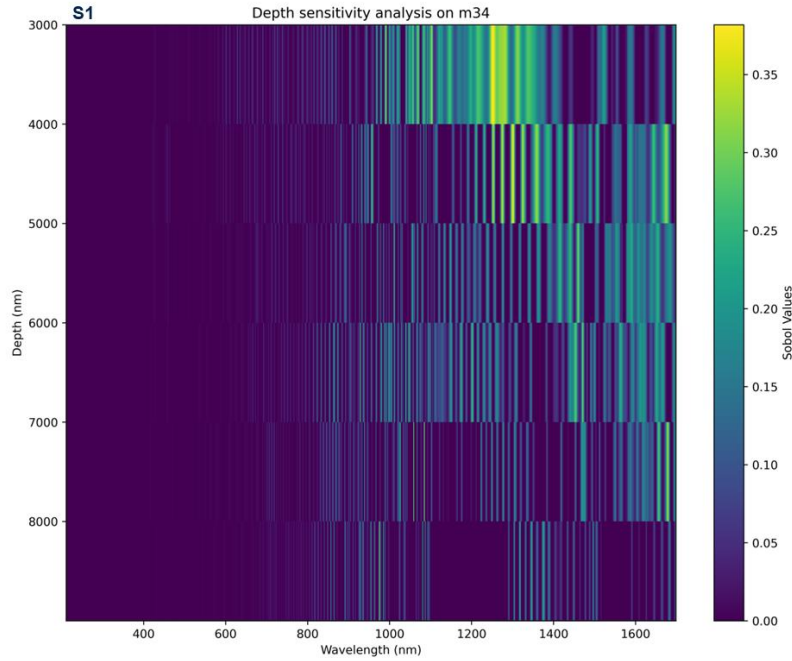


Figure 2: Sobol index main effect of trench depth across different variation ranges, with both bottom and top trench openings varying within a similar range.

- [1] J. Grasland, D. Le Cunff, H. L. Pham, M. Besacier, and J.-H. Tortai, "Sensitivity analysis of optical scatterometry technique for high-aspect ratio trench measurement," *Proceeding SPIE Metrol. Insp. Process Control*, vol. 12496, p. 124960C, Apr. 2023, doi: 10.1117/12.2657876.
- [2] T. Hingst *et al.*, "Spectroscopic ellipsometry-based scatterometry for depth and linewidth measurements of polysilicon-filled deep trenches," in *Metrology, Inspection, and Process Control for Microlithography XVIII*, SPIE, May 2004, pp. 587–596. doi: 10.1117/12.535646.
- [3] H.-L. Pham, T. Alcaire, S. Soulan, D. Le Cunff, and J.-H. Tortai, "Efficient Rigorous Coupled-Wave Analysis Simulation of Mueller Matrix Ellipsometry of Three-Dimensional Multilayer Nanostructures," *Nanomaterials*, vol. 12, no. 22, p. 3951, Nov. 2022, doi: 10.3390/nano12223951.