

Zone Plates with Optimized Zone Profiles

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It has been previously demonstrated that zone plates with slanted zones that meet the Bragg condition can have improved efficiency over zone plates with vertical zones [1-2]. This is of great interest for soft x-ray microscopy since it both improves the efficiency of the zone plates and makes higher order imaging feasible. There has previously been a proposed technique to fabricate a zone plate that approaches the goal of tilted zones by a multi-step electron beam lithography process, but the extremely tight specifications for placement accuracy for each step have made this challenging. We propose a one step method to fabricate zone plates with the optimally tilted zones intended for both improved efficiency and higher order imaging, and will present preliminary data on their fabrication.

[1] G. Schneider, Appl. Phys. Lett. 71, 2242 (1997)

[2] D. Hambach and G. Schneider, J. Vac. Sci. Technol. B, 17(6), 3212, Nov/Dec 1999.