

Study on Filter for Semiconductor of Minimizing Damage by X-Ray Laminography

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Abstract : This research used the MCNPX simulation program to evaluate the utility of a filter that was developed to minimize the damage to a semiconductor device during defect testing with X-ray. The X-ray generator was designed using the MCNPX code, and the X-ray absorption spectrum of the semiconductor device was obtained based on the designed X-ray generator code. To evaluate the utility of the filter, the X-ray absorption rates of the semiconductor device were calculated and compared for Ag, Rh, Mo and V filters with thicknesses of 25 μm , 50 μm , and 75 μm . The results showed that the X-ray absorption rate varied with the type and thickness of the filter, ranging from 8.74% to 49.28%. The Rh filter showed the highest X-ray absorption rates of 29.8%, 15.18% and 8.74% for the above-mentioned filter thicknesses. As shown above, the characteristics of the X-ray absorption with respect to the type and thickness of the filter were identified using MCNPX simulation. With these results, both time and expense could be saved in the production of the desired filter. In the future, this filter will be produced, and its performance will be evaluated.

Keywords : X-ray, MCNPX, filter, semiconductor, damage

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