Design of the broad angular multilayer analyzer for soft x-ray and extreme ultraviolet

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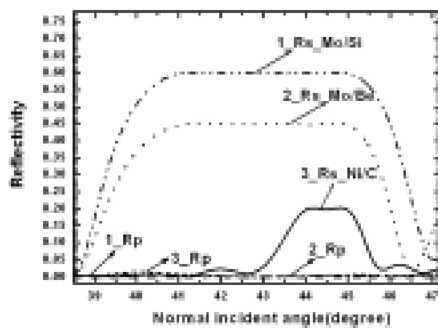
A new design method for the soft x-ray (SXR) and extreme ultraviolet (EUV) broad angular multilayer analyzer has been presented. The traditional multilayer analyzer should be placed at the Quasi-Brewster's angle, which is very difficult and complicated in practice. To overcome the shortcoming, the non-periodic broad angular analyzer using the numerical method is developed. The broad angular multilayer analyzer can deviate the Quasi-Brewster's angle several degree and show very high polarization. The main feature of our approach is the use of an analytical solution as a starting point for direct computer search, and the desired results can be given in a reasonable time. The method can be applied in different spectral range for suitable material combination. Figure shows s-reflectivity and p-reflectivity of Mo/Si, Mo/Be and Ni/C broad angular analyzers optimized with the use of direct computer algorithm to provide the plateau s-reflectivity for different material combination. (1)Mo/Si multilayer, R_0=0.60, N=40, λ=13nm,[41-45degree]. (2)Mo/Be multilayer, R_0=0.45, N=40, λ=11nm, [41-45degree]. (3)Ni/C multilayer, R_0=0.16, N=60, λ=5.2nm, [44-45degree]



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