

ED-XRF Using Multilayer Filter for Tunable Quasi-monochromatic X-Rays

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Energy dispersive X-ray fluorescence analysis (ED-XRF) is a very useful tool in industrial applications because of its handiness, although the element detection is not accurate as wave dispersive X-ray fluorescence analysis (WD-XRF). To improve accuracy and to reduce background noise of the element detection, for generating quasi-monochromatic beam we used a multilayer filter which is located between an X-ray source and a test sample. We obtained the tunable quasi-monochromatic X-rays ranged from 8 to 22 keV by changing the incidence angle between the X-ray source and the multilayer filter. We improved the low-counted element detection accuracy by using the tunable multilayer filter. We compared the result of element detection to the other cases of the X-rays generated by radioisotope sources, second target, and solid filters. In ED-XRF, the use of tunable multilayer for generating quasi-monochromatic X-rays has advantages in terms of low background noise and optimal excitation energy for the sample.