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## XRF Imaging Based on Polycapillary Optics

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A non-destructive elemental imaging is important for environmental, forensic, and material sciences. We will introduce a few approaches for x-ray elemental and chemical imaging in the laboratory at OCU.

The drawback of the scanning type XRF imaging would be a long acquisition time. Thus, a projection type XRF imaging has been studied. In my laboratory, we have developed WD-XRF imaging spectrometer using WDS spectrometer, a straight polycapillary optics, and x-ray CCD camera [1,2]. The advantage of WD-XRS is a high energy-resolution, approximately 40 eV [2]. Recently, we applied this technique for observation of corrosion process of metals in the acid solution.

In addition, we have studied full-field energy-dispersive type XRF (FF-ED-XRF) imaging spectrometer by taking useful advices from Dr. Romano [3]. In my presentation, the comparison of these XRF imaging techniques will be discussed. In all the cases, the straight type polycapillary optics play an important role for taking the XRF 1 : 1 images.

### References

1. K. Tsuji, T. Ohmori, M. Yamaguchi, Wavelength Dispersive X-ray Fluorescence Imaging, *Anal. Chem.*, 83 (2011) 6389-6394.
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3. F.P. Romano, C. Caliri, L. Cosentino, S. Gammino, L. Giuntini, D. Mascali, L. Neri, L. Pappalardo, F. Rizzo and F. Taccetti, *Anal. Chem.*, 86, (2014) 10892-10899.

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