

### 3D-XRF ANALYSIS OF SEVERAL FORENSIC AND INDUSTRIAL SAMPLES

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XRF analysis enables a nondestructive elemental analysis, which is a great advantage in forensic science. High-energy XRF method at SPring-8 has been applied to the analysis of heavy elements in forensic samples, such as automobile white paint fragment [1] and ceramic prints on automobile glass [2]. Some forensic samples have characteristic depth elemental profiles or layered structures; therefore, depth profiling will give additional useful information in forensic examination. Recently, the author's research group developed a new confocal 3D-XRF instrument using a sealed x-ray tube [3]. The spatial resolution (depth resolution) of this instrument was 13.7 micro-meters at an energy of 11.4 keV (Au Lb). By scanning the sample in x-y-z directions, 3D elemental imaging and depth elemental profiles are obtained.

In this presentation, after brief introduction of fundamental performance of our 3D-XRF instrument, applications of 3D-XRF to several forensic samples, such as automobile paint chips, glass fragments with ceramic coatings, and leathers, will be presented. In addition, the perspective of x-ray elemental imaging in the laboratory will be discussed.

#### References

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