

Meeting on X-Ray Fundamental Parameters for Reference-Free Analysis

September 20, 2013

National Institute for Materials Science

Tsukuba, Japan

Hosted by Discussion Group of X-Ray Analysis, The Japan Society of Analytical Chemistry and National Institute for Materials Science

There is increasing demand in determining the chemical composition of unknown specimens non-destructively, and also without using any reference materials. Even modern sophisticated analytical techniques do not always work in straightforward ways, when the reference materials are not available, as is the case for highly polluted environmental samples, actuopalaeontological samples, and materials from beyond the earth. X-ray spectroscopy has a potential capability of reference-free analysis using X-ray fundamental parameters because of well established theoretical models. The technique can be applied to many practical analyses, such as final inspection of industrial products, screening of wastes, systematic surveys of soils etc. To make a highly reliable analysis, it is absolutely significant to discuss the validity of existing X-ray fundamental parameters and further improvements.

As this meeting is the 1st occasion to discuss reference-free analysis with X-rays in Japan, we will hold several keynote lectures to learn about advanced activities in Europe, have discussions on potential activities in Japan, and exchange a wealth of technical information on the following issues: (1) Advances in theoretical and experimental methods for quantitative X-ray fluorescence analysis without the use of standard samples, (2) Updates of X-ray fundamental parameters such as mass absorption coefficients, fluorescence yields, Auger yields, relative line intensities, in theoretical calculation and/or experimental determination as well as the database, (3) Other novel X-ray metrology for realistic and feasible analysis.

Keynote lectures (tentative)

M. Mantler (Vienna University of Technology, Austria)

B. Beckhoff (Physikalisch-Technische Bundesanstalt, Germany)

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