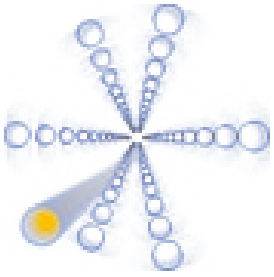

Contribution ID: **62** Type: **Poster**

PS2-21: Comparison of One- and Two-Crystals Schemes for Dual Wave X-Ray Absorptiometry

Tuesday, October 7, 2014 5:00 PM (1h 30m)

Nowadays X-ray absorptiometry is widely used in the X-ray structural analysis [1]. Moreover, this approach can be applied to elemental analysis of substance [2]. Another important applied task in which X-ray absorption approach is used is content control of components in media containing limited number of fractions, e.g. composition control of two- and three-component media that industry needs [3]. The authors have proposed the method of dual wave x-ray absorptiometry [4] which means absorption factors analysis in two X-ray spectral lines. Since the primary radiation, which penetrates an investigated object and weakens in a varying degree depending on component composition of the object, is information carrier, the main limiting factor for sensitivity of the method is registered X-ray beam intensity. Two approaches can be used to increase the intensity. The first one is concentrating X-ray optics such as multicapillary half-lenses. Besides, use of optics makes it possible to carry out analysis with lower current of the source and therefore extend its lifespan. The second approach is optimization of X-ray monochromatization scheme. In this report possibility of multicapillary optics use for increased initial X-ray beam intensity is reviewed and comparison of the one- and two-crystals monocromatization schemes is made.

References

1. Bunker G 2010 Introduction to XAFS: A Practical Guide to X-ray Absorption Fine Structure Spectroscopy (New York: Cambridge University Press)
2. A. Gogolev, Yu. Cherepennikov, Device for X-ray spectral absorption analysis with use of acoustic monochromator, Journal of Physics: Conference Series, V. 517, Article number 012037 (2014) 1-5
3. Stein-Arild Tjugum X-ray based densitometer for multiphase flow measurement // Patent US 20120087467 A1, G01N23/223 pub.date 12.04.2012.
4. A. S. Gogolev, R. O. Rezaev and Yu. M. Cherepennikov, Patent Application RU 2014122059 (2014)

Primary author: Mr CHEREPENNIKOV, Yury (Tomsk Polytechnic University)

Co-authors: GOGOLEV, Alexey; OGREBO, Andrey (Tomsk Polytechnic University); REZAEV, Roman (National Research Nuclear University MEPhI (Moscow Engineering Physics Institute))

Presenter: Mr CHEREPENNIKOV, Yury (Tomsk Polytechnic University)

Session Classification: PS: Poster Session