for obtaining ten times higher intensity than that of the ordinary-type single crystal analyzer with equal resolution. Experimental details and applications to structure analysis such as Rietveld refinement will be reported.

Keywords: multi-crystal analyzer; high angular-resolution; crystal structure analysis

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The Precision of XRD Apparatus Can Be Assessed by Accounting for Secondary Extinction of a Single Reflection.

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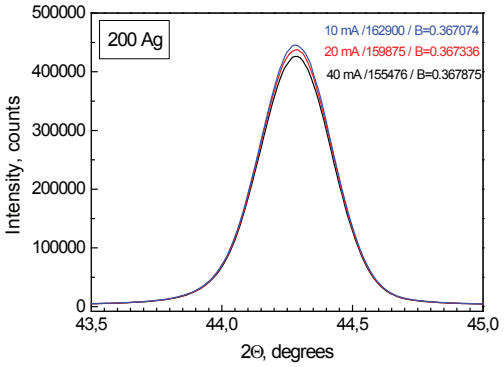
The purpose of this study is to gain insight into the operative capabilities of XRD apparatus to supply measurement data informative for its precision. One can assess apparatus precision using parameterized criteria bounded inextricably by a measurement procedure that insists particularly on a change of the incident X-ray beam intensity I_0. Quantifying kinematical intensity I_{kin} [$=PI_0QS/2\mu$] and secondary extinction (SE) coefficient g [$=kPI_0S/2\mu$], the intensity I_0 defines the level of interaction between X-radiation and crystal media. Here P is the texture factor (pole density): it represents the relative volume fraction of crystallites whose <*hkl*>-poles contribute to reflection [1], k is the empirical extinction coefficient, and other symbols have their usual meaning (see [2] as well). The second equation above read that decrease of the level of interaction of *the diffraction process* is controlled by g in terms of I_0 under otherwise equal conditions. Hence, the intensity measured at a level of interaction is affected by SE as strongly as higher I_0 is. This is illustrated by the figure below showing profiles of 200 reflection corresponding to the main <100> component of a textured sample of silver measured at three different levels of interaction under the same time(τ)-generator current(i)-factor as defined: $\tau i = \tau^* i^* = \tau^{**} i^{**}$. The legend inside the figure represents i-values used to cause discrete changes in the I_0-intensities that reflect in the areas under profiles and integral breadths B due to respective SE effects. Whereas these measurements show a simple qualifying of the SE effects, the single reflection method [2] is a proper tool for quantification of the same data.



[1] Bunge. H. J. **1997**. *Textures and Microstructures*. 29, 1-26. [2] I.Tomov, **2007**. *Z. Kristallog*. Suppl. 26, 131-136.

Keywords: precision; X-ray diffraction apparatus; secondary extinction