New Method of Solid State Structural and Composition Analysis

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In the present paper, in contradistinction to Debye, Laue and Fudji grammas, new gramma based on the phenomena of parametric X-ray radiation (PXR) of the relativistic charge particle in single crystals is offered. On the analogue of X-Ray Laue gramma due to X-Ray "white" beam diffraction on crystalline lattice, the relativistic charge particle interacting with crystalline lattice originated grammas of PXR, consisting of variety of dynamic yields with specific angular and energy distributions. Actually it is an analogue of X-ray "white" beam diffraction with a slite difference, that in the case of PXR the X-ray radiation sources are disposed in crystal along the trajectory of relativistic charged particle passage.

Several experimental investigations of the PXR phenomena of electrons with energies 855MeV [1] and 20MeV [2] in quartz and niobate lithium single crystals were conducted. Appropriate grammas for observed targets-radiators were obtained.

Hereby, on the basis of obtained results new simple and express method to analyze solids composition and structure with accuracy not worse then by existing methods is offered.

[1] Wagner W., Mkrtchyan A.R., et al., *Report FZR-271*, Sept. 1999 ISSN 1437-322X, 27. [2] Mkrtchyan A.R., et al., *V Int. Symp. RREPS*, 2001, 47.

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