## Metrological Assurance of the Substance and Materials Investigations by Diffraction Methods

B.N. Kodess, S.A. Kononogov, Crystals Metrology Dept. CMD, of VNIIMS, Russia. E-mail: bnkodess-vm@vniims.ru

Volume and reliability of information about the properties of crystalline substances and materials are frequently determined by the optimum experiment planning and application of the corresponding equipment. However, solving of reverse type problem on the obtaining the characteristics of crystals from the diffraction pattern is determined by the level of the development of data processing methods and by the quality of the chosen starting model. The latter component is connected to some extent with intuition and researcher confidence in the admissibility of the model used.

Crystals Metrology Dept. (CMD) develops metrological assurance for the diffraction measuring instruments. For practical Crystals Metrology this assurance includes the system of the Certified Standard Reference Materials (SRM) diffraction properties of materials, Procedures of Measurements, Databases, Sequence of test steps and other normative documents for the tests according to declared functions (designations) of diffraction equipment (for Type Approval and conformity tests). CMD organizes and processes the data of interlaboratory experiments of round-robin type, carries out its own experiments of high and the highest accuracy for some poly- and single-crystals key materials of modern technologies, develops the methods for investigation and characterization of new complex substances, including certification of medications and determination of resources of materials and products made of these materials. The task of establishment of reproducible Mass Unit (both as the characteristic of a Substance Quantity and the characteristic of its inertness measure - gravitational constituent - namely the Kilogram Unit on the basis of high-clean certified Silicon) remains urgent among CMD basic tasks of fundamental Diffraction Crystals Metrology the same as the task of the interrelation of the basic units of SI.

Keywords: materials metrology, data accuracy, standard reference samples