MS39-1-1 In memory of R. J. Haüy
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Abstract
R.J. Haüy's (1743-1822) contribution to science is enormous. He is the creator of the first theory of the structure of crystals. He approved the idea of symmetry in the science of crystals. According to Haüy, crystalline bodies are masonry of polyhedral-bricks-"molecules". Each crystalline substance is characterized by its characteristic form of the molecules. As a result, Haüy established a general principle according to which all varieties of one crystalline substance enclose, as an elementary cell, a part of a crystal that has a "primitive and original form of a certain kind". He called these unit cells "integrated molecules". Thus Haüy considered the atoms of any substance as elementary molecules, the structure of which determines the shape of the crystals. The discoveries of Haüy became the basis for the creation of the atomic theory adequate to reality. Unfortunately, in 1848, Augusto Bravais replaced the molecular "bricks-molecules" with their centres of gravity (dots), which ultimately led to spatial lattices, which now underlie the modern concept of crystal structures. In the end this led to the modern atomic model, according to which atoms are, actually, empty spherical spaces and in their centres are superdense tiny nuclei. Such identical structural elements (physical points - atoms), obviously, cannot lead to the variety of structures that exist in nature, which was observed by Haüy. Haüy proved that each crystalline substance is characterized by an individual structure, which is expressed, in particular, in the repeatability of its typical interfacial angles. In the framework of the Wave Model, which we have developed, we proved that atoms are elementary nucleon molecules and characteristic polar angles of the arrangement of nodes in them completely coincide with the mentioned characteristic angles of crystals measured by Haüy. The nodal structure of the atomic spherical shells, following from the solution of the wave equation, for the first time obtained by us, is presented in Fig.1. So, Haüy's idea of a molecular-crystal-like structure of elementary "bricks" (atoms), of which crystalline substances are made up (put forward by him almost 250 years ago), was at last developed and its adequacy to reality was finally confirmed. This became possible thanks to a new theory, based on dialectical philosophy and its logic - Wave Model [1-3].

References
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