

Prenucleation clusters of "hidden" phase are basic building units of growth of crystals

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At the end of last century the author had proved the possibility of spontaneous formation and relative stable existence of special nano-size clusters in supersaturated media (solutions, vapor phase) and overcooled melts. These clusters were interpreted as prenucleation protomineral particles and were named clusters of "hidden" phase or quatarons [1]. On this basis a special quataron concept of cluster self-organization of matter at nano-level was formed within which a number of debatable questions of the nucleation theory, formation of crystalline and non-crystalline materials [2], including hierarchically constructed amorphous (opal-like) materials was solved. Next years new ideas on clusterization of substance in crystal-forming media and prenucleation clusters became extremely popular and find more and more experimental proofs. Owing to really specific character of their properties, these clusters are given special names by other authors - for example «DOLLOP» [3]. We, in turn, go further - we consider quatarons, dollops and other similar particles as the basic building units of growth of crystals [4]. As a result a principally new concept of quataron growth of crystals, different from known concepts of microblock (Fedorov-Balarev) and atomic (Kossel-Stransky) growth of crystals was formed on this basis. The quataron concept developed by us allows to generalize nowadays popular ideas of nonclassical crystal-growth that are presented in the given report.

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