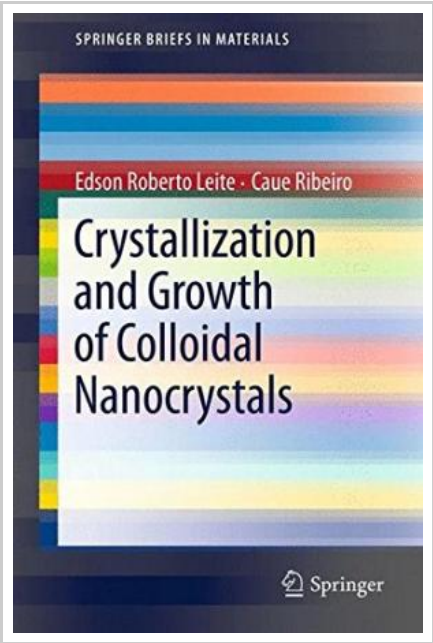

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Crystallization and Growth of Colloidal Nanocrystals (Paperback)

By Edson Roberto Leite, Caue Ribeiro

Springer-Verlag New York Inc., United States, 2011. Paperback. Book Condition: New. 2012. 224 x 154 mm. Language: English . Brand New Book ***** Print on Demand *****.Since the size, shape, and microstructure of nanocrystalline materials strongly impact physical and chemical properties, the development of new synthetic routes to nanocrystals with controlled composition and morphology is a key objective of the nanomaterials community. This objective is dependent on control of the nucleation and growth mechanisms that occur during the synthetic process, which in turn requires a fundamental understanding of both classical nucleation and growth and non-classical growth processes in nanostructured materials. Recently, a novel growth process called Oriented Attachment (OA) was identified which appears to be a fundamental mechanism during the development of nanoscale materials. OA is a special case of aggregation that provides an important route by which nanocrystals grow, defects are formed, and unique-often symmetry-defying-crystal morphologies can be produced. This growth mechanism involves reversible self-assembly of primary nanocrystals followed by reorientation of the assembled nanoparticles to achieve structural accord at the particle-particle interface, the removal of adsorbates and solvent molecules, and, finally, the irreversible formation of chemical bonds to produce new single crystals, twins, and intergrowths. Crystallization and Growth...

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