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## Nonclassical Crystallization of Bivalent Metal Carbonates

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 Neuware - Since non-classical crystallization pathways were revealed, our picture of nucleation and crystal growth became in the last year quite confusing and ramified: we are confronted with the existence of liquid phases of amorphous calcium carbonate, polymer-induced liquid precursor and, last but not least, pre-nucleation clusters. This contribution explores: (a) The symmetry-breaking phase-selection of calcium carbonate, which is based upon a subtle interplay of interlinked equilibria and is ultimately ascribed to the weak parity violation energy difference. (b) A morphogenetic employment of mesocrystallinity: the inter-crystalline minority constituent of a mesocrystal, e.g. occluded protein or polymeric additives, experiences compression-molding which can be employed for the preparation of nanotubes of various materials, e.g. calcium carbonate or cadmium sulfide. (c) The existence of a liquid intermediate phase during metal carbonate formation. By a diffusion-controlled and contract-free experimental setup, unequivocally evidence for the existence of nonclassical liquid intermediates, which precede the crystalline phase of bivalent carbonates at near-neutral conditions, is provided. 120 pp. Englisch.



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