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Shoaib Ahmad

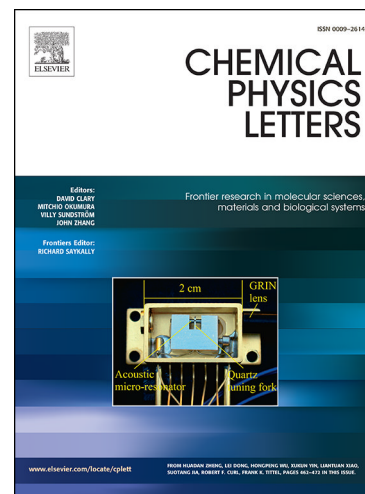
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Information-theoretic model of self-organizing fullerenes and the emergence of C_{60}

Shoaib Ahmad

NCP, QAU Campus, Shahdara Valley, Islamabad 44000, Pakistan

Email: sahmad.ncp@gmail.com

Abstract

An information-theoretic model describes the dissipative dynamical systems composed of ensembles of fragmenting, self-organizing fullerenes. The probabilities derived from the variations of the fullerene number densities that occur during *cage* \rightarrow *cage* transformations are used to evaluate Shannon entropies for every carbon cage. Fractal dimension of the cages are calculated from their respective entropies. C_{60} is shown to emerge as the end-directed evolution of dynamical systems of four different ensembles of fullerenes. The information generating, transforming cages of carbon provide a perspective to evaluate the self-organizational behavior of dissipative structures.

Keywords: Fractal dimension, information-theoretic entropy, self-organization, fullerenes, emergence, dynamical systems

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