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Implications of Symmetry for Polar Molecular Crystals

Guest Editor:

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Deadline for manuscript submissions:
closed (1 December 2017)

Message from the Guest Editor

Polar crystal structures (those belonging to one of the 10 pyroelectric point groups) represent special objects because of the existence of a polar axis and corresponding (hkl) faces carrying a charge. Here, a number of fundamental issues come up concerning, e.g., mechanisms for charge or dipole/electrical field compensation. What is the true stationary state of such an object? From quantum mechanics we know that a system in its stationary state cannot carry a permanent dipole moment. What are, thus, the possible domain states, particularly for non-ferroelectric polar structures? How can charges from the environment account for compensating surface charge? What do we know experimentally about this? Why do faces opposite in signs show different hkl faces and different growth speeds? What is the influence of the morphology on the inner and outer electrical field (compensated vs. non compensated state) and on the growth behavior?

We would like to restrict contributions to molecular crystals of neutral molecules. Both theoretical (analytical, computational) and experimental work (crystallography and crystal physics) are welcome for consideration.

mdpi.com/si/6958

Special Issue

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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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