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Author(s)	Brand, Helmut R.
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Cross-coupling of Tetrahedratric Order

Helmut R. Brand

Department of Physics, University of Bayreuth, 95440 Bayreuth, Germany

We discuss how tetrahedratric order couples to external fields, forces and other variables [1-4]. In particular, we show that the application of an external electric field to a tetrahedratric phase induces quadrupolar orientational order, thus inducing a nematic phase in a field. We discuss a linear gradient term coupling tetrahedratric and quadrupolar order and show that this term could explain the ambidextrous chiral domains observed in nematic phases formed by achiral banana-shaped molecules.

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