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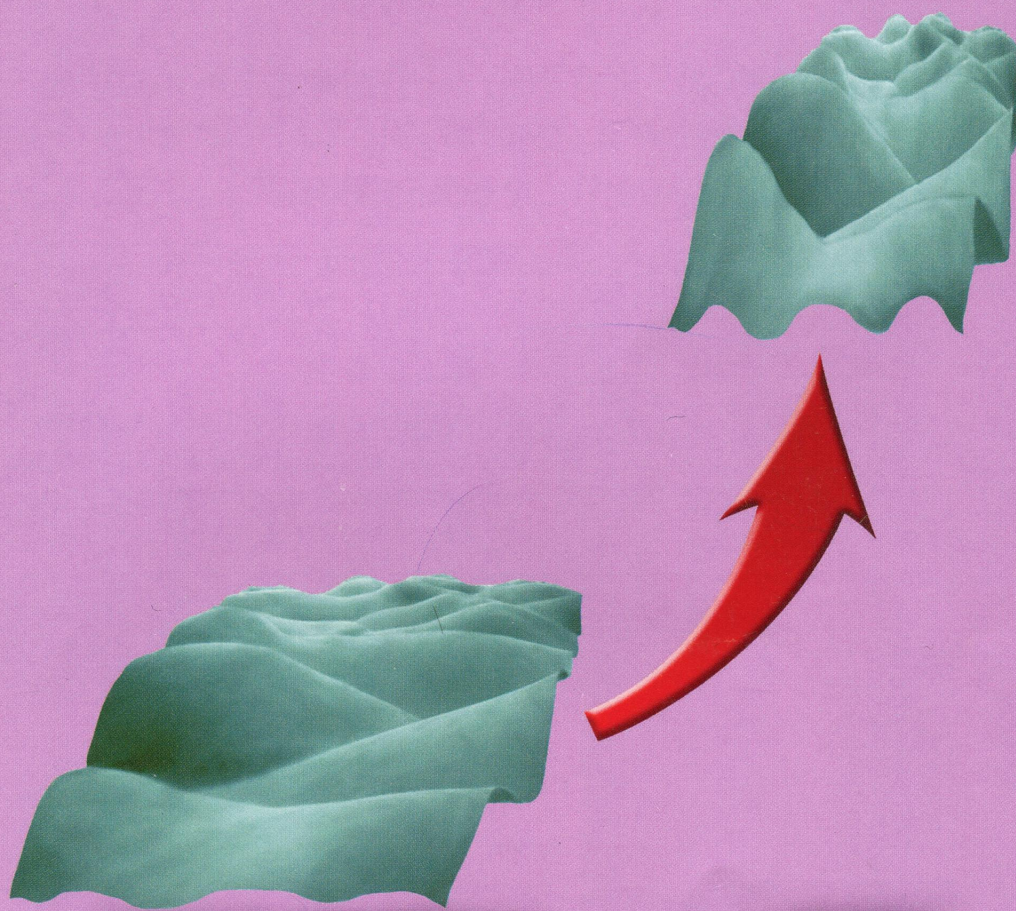
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B

$$U(\mathbf{R}) \cong h(\rho)\tilde{\Phi}(\rho^{1/3}\mathbf{R}) + g(\rho)$$



Compression Induces
a Linear Affine
Scaling of the
Potential-Energy
Surface
(see page 10007)

BIOPHYSICAL CHEMISTRY, BIOMATERIALS, LIQUIDS, AND SOFT MATTER



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ON THE COVER: For many liquids and solids, compression induces a linear affine overall scaling of the high-dimensional potential-energy surface, a phenomenon referred to as hidden scale invariance. The Feature article reviews recent works that have established this novel picture of the physical chemistry of condensed matter. It applies to a good approximation for van der Waals bonded and metallic systems but not for systems dominated by directional forces like hydrogen bonds or covalent bonds. Systems with hidden scale invariance are characterized by having isomorphs in their thermodynamic phase diagram, which are curves along which structure and dynamics to a good approximation are invariant in reduced units. In effect, the phase diagram becomes one-dimensional for many purposes. Hidden scale invariance is restricted to the “ordinary” liquid phase not far from crystallization and to the crystalline and supercooled liquid phases, close to the critical point, and in the gas phase this approximate symmetry does not apply. The theoretical framework presented offers a unified perspective on phenomena well-known from experiments and simulations like density scaling of supercooled liquid and polymer dynamics, isochronal superposition, excess entropy scaling, collapse of order-parameter maps, aging, thermoviscoelastic response functions and their connection to unity Prigogine-Defay ratio, melting line invariants, etc. Cover art created by Nis Jakob. See page 10007.

Feature Article

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Hidden Scale Invariance in Condensed Matter

Jeppe C. Dyre*

dx.doi.org/10.1021/jp501852b

Articles

Biophysical Chemistry and Biomolecules

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Hydrogen Bonds and Heat Diffusion in α -Helices: A Computational Study

German Miño,* Raul Barriga, and Gonzalo Gutierrez

dx.doi.org/10.1021/jp503420e

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Fluorescence Quenching Studies of γ -Butyrolactone Binding Protein (CprB) from *Streptomyces coelicolor* A3(2)

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dx.doi.org/10.1021/jp503589h

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Ibuprofen and Propofol Cobinding Effect on Human Serum Albumin Unfolding in Urea

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dx.doi.org/10.1021/jp504280n

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Insights into the Oxygen-Based Ligand of the Low pH Component of the Cu^{2+} -Amyloid- β Complex

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dx.doi.org/10.1021/jp5047529

10065  [dx.doi.org/10.1021/jp504096d](https://doi.org/10.1021/jp504096d)

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10319  [dx.doi.org/10.1021/jp506358h](https://doi.org/10.1021/jp506358h)
Simple and Efficient Chiral Dopants to Induce Blue Phases and Their Optical Purity Effects on the Physical Properties of Blue Phases
Keiki Kishikawa,* Takaaki Sugiyama, Tomohiro Watanabe, Shota Aoyagi, Michinari Kohri, Tatsuo Taniguchi, Masahiro Takahashi, and Shigeo Kohmoto

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