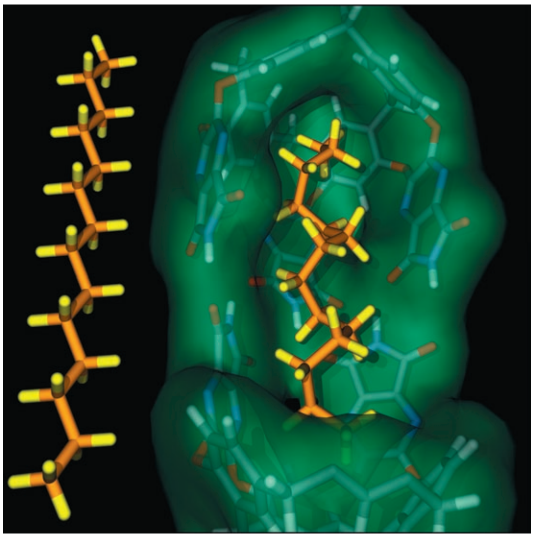
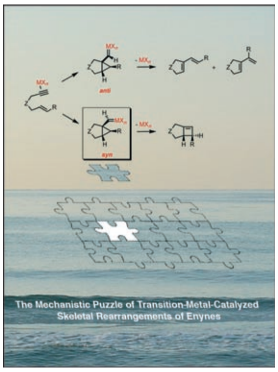
Unusual conformations…

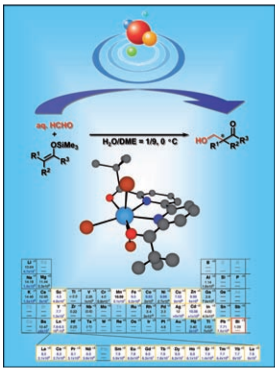
… are adopted by alkanes to maximize interaction with natural and synthetic hydrophobic cavities. In their Concept article on page 5924 ff., J. Rebek, Jr. and M. P. Schramm describe how the coiling of alkanes results in an increase in steric strain through the introduction of *gauche* conformations, but through mutual adaptation, the union of host and guest overcomes these otherwise unfavorable interactions.

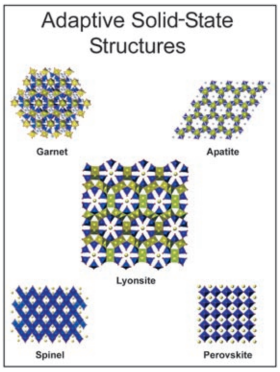




Transition-Metal Catalysis
In their Concept article on page 5916 ff., A. M. Echavarren et al. present a concise mechanistic framework that accounts for the experimental results of metal-catalyzed cyclizations, and that indicates that once the alkyne is activated by coordination with an electrophilic transition metal, the alkene can react in two manners: in addition to the more common *anti* pathway, a *syn* attack of the alkene is also possible.

Lewis Acid Catalysis
In their Concept article on page 5954 ff., S. Kobayashi and C. Ogawa describe the development of a new approach to Lewis acid catalysis in which Lewis acids that are generally unstable in the presence of water are rendered amenable to aqueous systems when combined with basic ligands. In particular, the use of chiral basic ligands leading to new types of water-compatible chiral Lewis acids may enable a wide range of asymmetric catalysis in aqueous media.





Lyonsite Crystal Framework
The lyonsite crystal framework constitutes a large family of materials, spanning a wide range of elements, oxidation states, and cation stoichiometries similar to other important structure types, such as perovskite, garnet, apatite, and spinel. In their Concept article on page 5944 ff., K. R. Poeppelmeier et al. describe how cation vacancies and off-cation stoichiometry contribute to this remarkably adaptive structure type.

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