

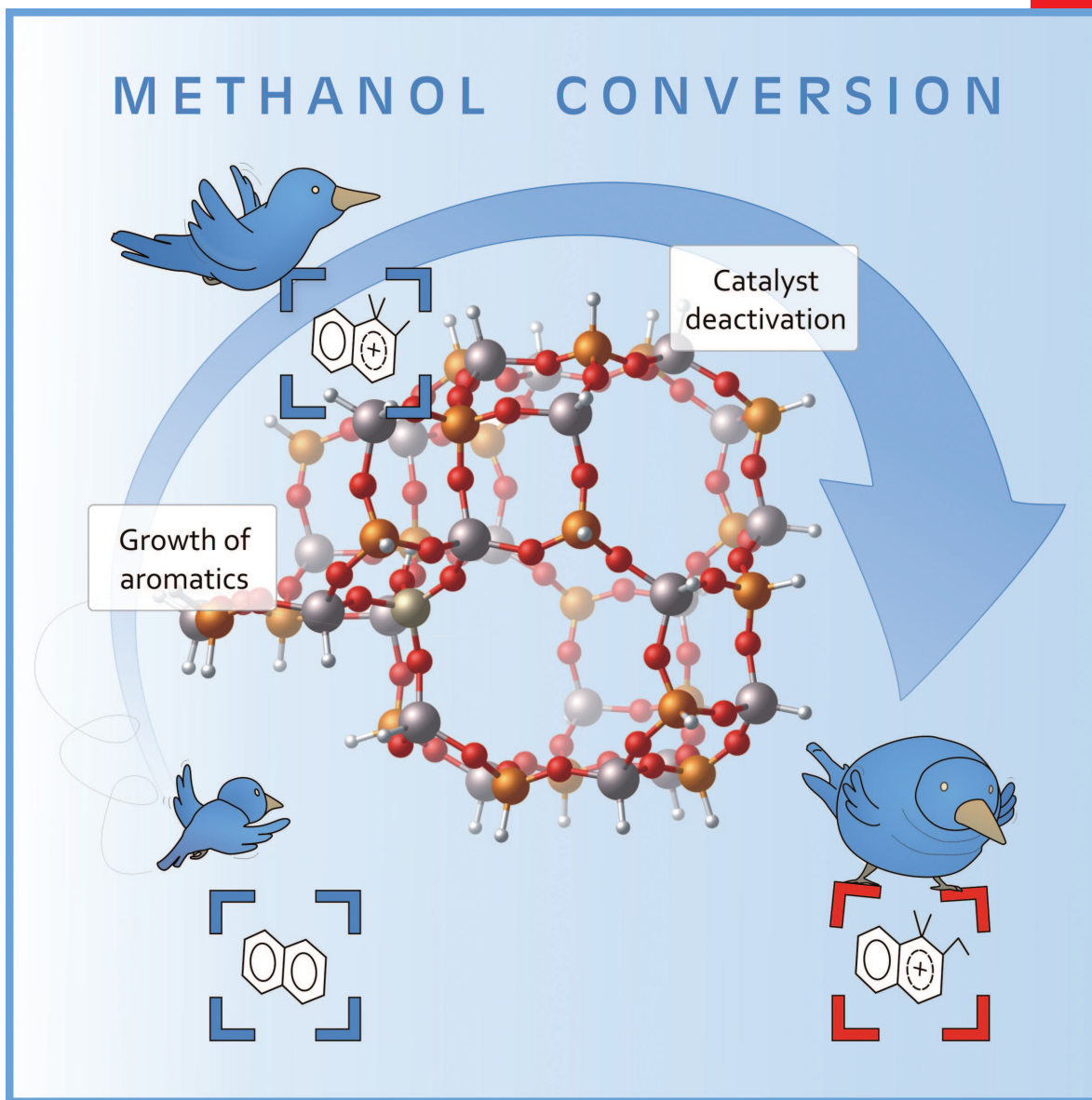
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METHANOL CONVERSION



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Concept

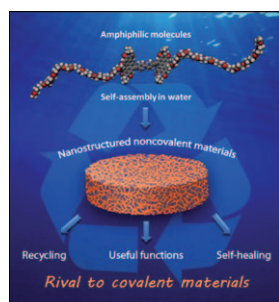
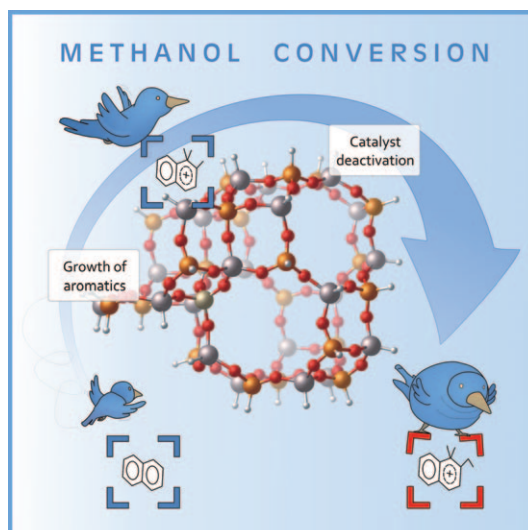
Noncovalent Water-Based Materials: Robust yet Adaptive
B. Rybtchinski and E. Krieg

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The growth process...

... and activity of naphthalenic species during methanol conversion within the industrially important catalyst H-SAPO-34 is described using ab initio simulations on a large finite cluster model. The cover shows that addition of methyl groups is feasible, leading to larger hydrocarbon pool compounds. An actual side-chain methylation turns out to be a very slow step, and the involved species should be regarded as deactivated coke precursors challenging the steric limitations of the catalytic pore. For more details see the Full Paper by K. Hemelsoet, V. Van Speybroeck et al. on page 9083 ff.

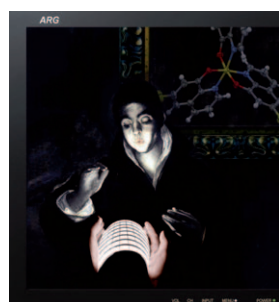
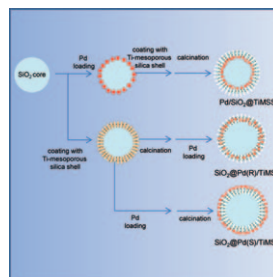


Noncovalent Materials

In the Concept by E. Krieg and B. Rybtchinski on page 9016 ff., the benefits of the adaptivity of noncovalent materials are discussed. While noncovalent interactions are generally considered weak, strong hydrophobic interactions in water can be exploited to create noncovalent materials that are unusually stable, thus allowing practical use in real-life applications.

Core-Shell Catalysts

A new type of core-shell structure catalyst consisting of a Pd-nanoparticle (NP)-supported uniform SiO₂ core and a Ti-containing mesoporous silica shell was prepared. The designed architecture offers a simple and efficient catalyst system to enable the one-pot oxidation of sulfide in the presence of H₂ and O₂, in which both Pd NPs and isolated Ti oxide moieties within the frameworks are active sites for the formation of H₂O₂ and the oxidation of sulfide, respectively. For more details see the Communication by H. Yamashita et al. on page 9047 ff.



Organic Light Emitting Diodes

EL-Greco's "Boy Lighting a Candle" immortalized the emotion associated with light and enlightenment; 400 years later, organic light emitting diodes (OLEDs) ignite the same passion and hope for this new technology in displays and general lighting applications. For some of the latest results on new blue-emitting Al^{III} complexes with substituted 8-hydroxyquinoline ligands and their application in OLEDs see the Full Paper by P. Anzenbacher, Jr. et al. on page 9076 ff.

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