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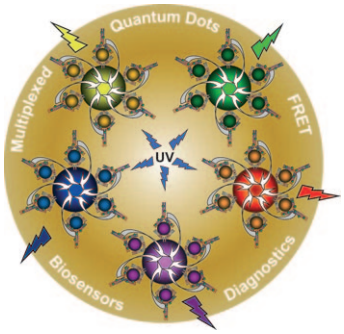
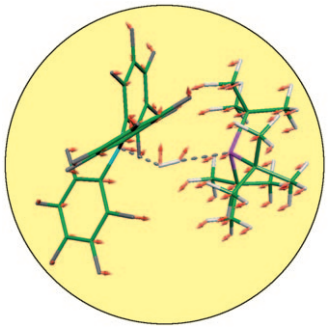
Cover Picture

Helmut Goesmann and Claus Feldmann*

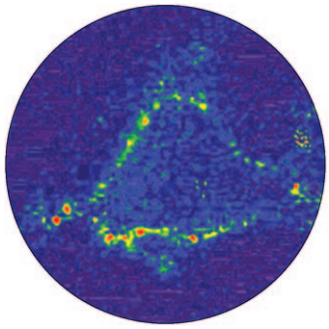
Nanoscientists boldly go to the frontiers of the smallest solids in basic science and their technical application. In their Review on page 1362 ff., H. Goesmann and C. Feldmann point to the visionary potential of nanoparticulate functional materials. After a general introduction of the topic, the optical, electrical, magnetic, and catalytic properties of nanoparticles as well as their potential for upgrading materials are summarized. Moreover, fundamentally novel shapes and compositions of matter are presented.



Biosensors
Detection of energy transfer from luminescent terbium complexes to semiconductor quantum dots allows a fivefold multiplexed bioassay. In their Communication on page 1396 ff., N. Hildebrandt et al. report sub-picomolar detection limits for five bioanalytes.



Frustrated Lewis Pairs
In their Communication on page 1402 ff., S. Grimme, G. Erker, and co-workers use a state-of-the-art theoretical analysis to determine the deciding factors in the activation of dihydrogen and other small molecules with frustrated Lewis pairs.



ATP Detection
A fluorescence-quenching process delivers spatiotemporal information of ATP in living cells. M. S. Strano and co-workers present a highly sensitive nanotube-based sensor that uses this principle in their Communication on page 1456 ff.