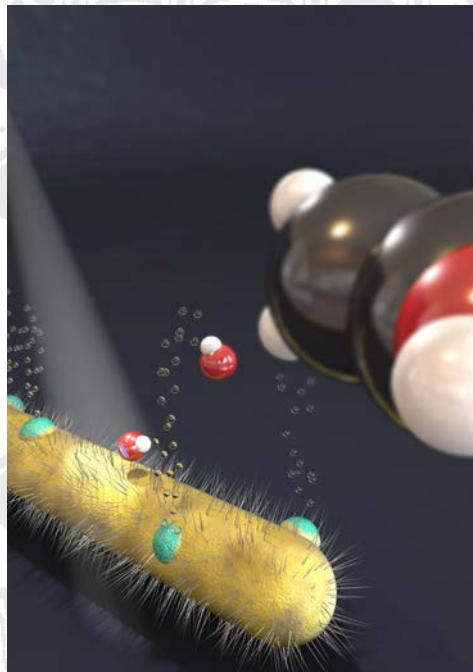


PHYSIKALISCHES KOLLOQUIUM

AM 12. JANUAR 2015 UM 17 UHR C.T.

IM GROßEN HÖRSAAL



PHOTOCATALYSIS WITH SEMICONDUCTOR NANOCRYSTALS

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I will review our scientific work on photocatalytic water splitting utilizing colloidal semiconductor nanocrystals decorated with catalytic metal clusters. In particular CdS nanorods and TiO₂ nanoparticles will be discussed. Key issues are the role of hole scavengers, the size and density of catalytic clusters, relaxation dynamics of electrons and holes and dependencies on external parameters such as pH.

Redox shuttle mechanism enhances photocatalytic H₂ generation on Ni-decorated CdS nanorods

T. Simon, N.s Bouchonville, M. J. Berr, A. Vaneski, A. Adrović, D. Volbers, R. Wyrwich, M. Döblinger, A. S. Sussha, A. L. Rogach, F. Jäckel, J. K. Stolarczyk, J. Feldmann,

[Nature Materials 13, 1013 \(2014\)](#)

[2] Size-selected sub-nanometer cluster catalysts on semiconductor nanocrystal films for atomic scale insight into photocatalysis; M. Berr, F. Schweinberger, M. Döblinger, K. Sanwald, C. Wolff, J. Breimeier, A. Crampton, C. Ridge, M. Tschurl, U. Heiz, F. Jäckel, J. Feldmann,

[Nano Letters 12, 5903 \(2012\)](#)

[3] Colloidal CdS nanorods decorated with sub-nanometer sized Pt clusters for photocatalytic hydrogen generation; M. Berr, A. Vaneski, A. S. Sussha, J. Rodríguez-Fernández, M. Döblinger, F. Jäckel, A. L. Rogach, J. Feldmann,

[Appl. Phys. Lett. 97, 093108 \(2010\)](#)