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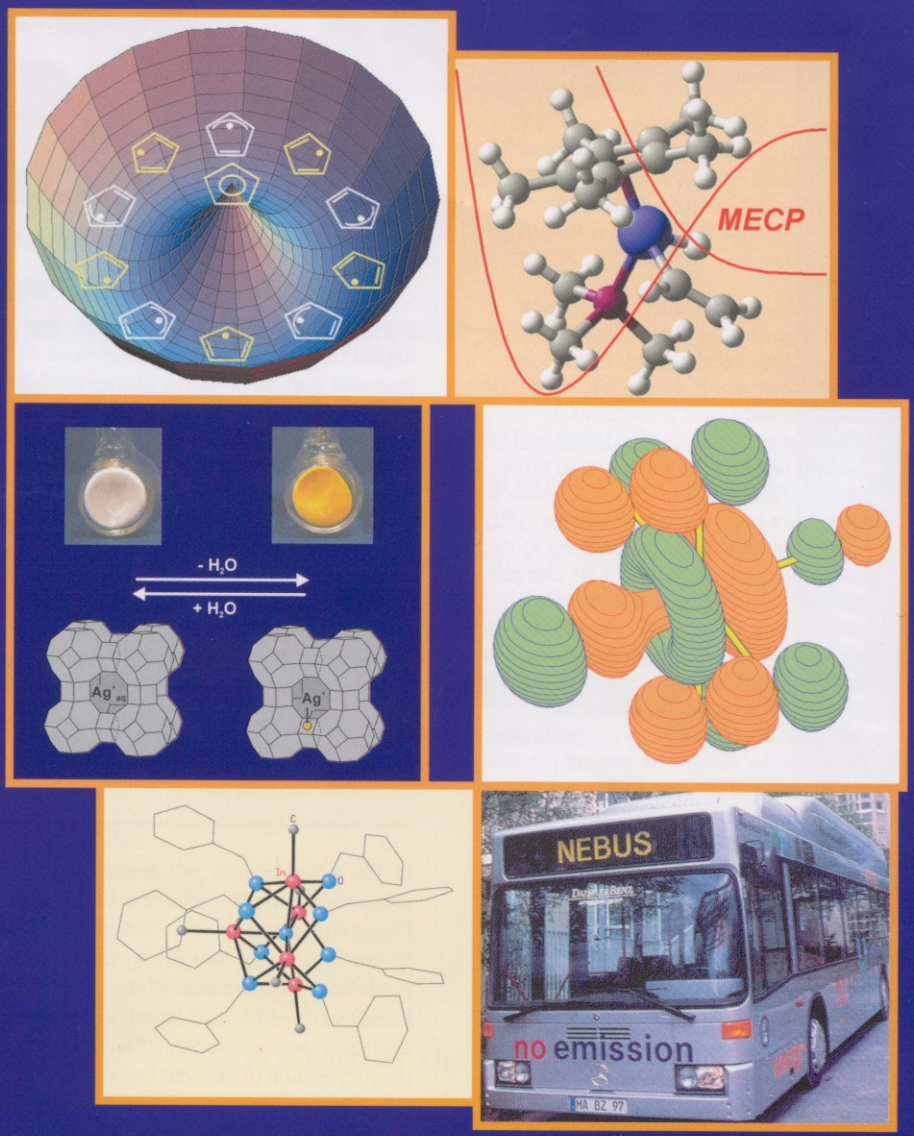

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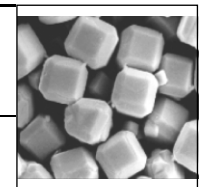
The electronic structure of Cu^+, Ag^+, and Au^+ zeolites



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A variety of procedures have been used to prepare d^{10}-zeolite materials. The electronic structure of these materials can be regarded to a first approximation as a superposition of the framework, of the charge compensating ions, of solvent molecules and of guest species. Zeolite oxygen to d^{10}-ion charge transfer transitions dominate the electronic spectra if the ions coordinate to the zeolite oxygens. Specific coordination sites can influence the energy and the intensity of these transitions remarkably. Intra guest transitions dominate in quantum dot materials, as discussed in detail for luminescent Ag_2S zeolite A. The zeolite is not needed for the photocatalytic water oxidation on $Ag^+/AgCl$ photo anodes with visible light. It can, however, be used to increase the active surface area substantially.

Gion Calzaferri (left) received his PhD degree at the University of Fribourg, Switzerland, 1971. He moved to the University of Berne, after a postdoc period at the University of Basel and physical-chemical research in connection with pharmacy at Ciba-Geigy Basel, Switzerland. He has been professor of physical chemistry in the Department of Chemistry and Biochemistry since 1988. His current research interests concern supramolecularly organized molecules, clusters and complexes in zeolite cavities, dye-zeolite materials as photonic antenna systems, and photochemical transformation and storage of solar energy.

Claudia Leiggener (front, left) received her Diploma in Chemistry (2001) at the University of Berne. She is now working as a PhD student in Berne on time resolved spectroscopy of luminescent silver sulfide clusters.

Stephan Glaus (middle) obtained his Diploma in Chemistry (1998) and his PhD degree (2002) from the University of Berne with a thesis entitled theoretical investigations of interfaces of silver and silver chloride clusters.

David Schürch (right) studied chemistry at the University of Calgary and the University of Berne where he obtained his first degree. In 2002 he received his PhD degree at the University of Berne.

Ken'ichi Kuge (front, right) has worked at the Department of Imaging Science, Chiba University, since 1979. He received his PhD degree from Kyoto University in 1984. He has been an associate professor for photosensitive materials since 1992. His current research interests concern photographic sensitivity, preparation of gold clusters and radiation measurement using photographic techniques.