CBI-Kolloquium WS 2010/11

Die Vorträge finden jeweils um 16.15 Uhr im Hörsaal H3, Egerlandstr. 3 statt.
Alle Interessenten sind herzlich eingeladen.

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Organic crystals – More than simple additives toward better fine particulate functional materials

Roles of various organic crystals (OCs), notably those containing nitrogen or fluorine, on the preparation and properties fine particulate functional materials are featured. When OCs are intimately mixed with metal salts like carbonates, their decomposition is accelerated, liberating the diffusing species at temperatures lower than usual. This favors low temperature synthesis of various electroceramic materials. Mixing of OCs with metal oxides triggers anion exchange and introduction of oxygen vacancies. These, in turn, change the energy band structure and hence the photonic responses of the host oxides. Three case studies will be discussed:
i) Substitution of oxygen in some transition metal oxide fineparticles with nitrogen, fluorine and introduction of oxygen vacancies during co-grinding with urea, glycine and/or polytetra fluoroethylene;
ii) Increase in the rate of reaction for phase pure perovskites via a solid state route with glycine as an example of OC, and
iii) Phase pure solid state synthesis of $Li_4Ti_5O_{12}$ by mechanically activating the intermediate, Li_2TiO_3 with 3 amino acids as OCs.
Some general features of these processes will be displayed as concluding remarks.