BuildMoNa

UNIVERSITÄT LEIPZIG

Fakultät für Chemie und Mineralogie
Institut für Anorganische Chemie

E i n l a d u n g zum Kolloquium

Am Mittwoch, dem 09.07.2014, 17:00 Uhr, spricht

Herr Professor Dr. Kenton H. Whitmire

Department of Chemistry
RICE University Houston, Texas, USA

zum Thema:

„ Using Molecular Single Source Precursors for the Preparation of Advanced Materials: Strategies, Limitations and Successes".

Using Organometallic Chemistry to Solve Problems in Materials Science

For the past couple of decades, chemists have utilized "soft methods" for the production of materials that are more easily processed on the nanoscale. The now-classical example is the production of quantum dot materials such as cadmium chalcogenides. Many of the materials that have been the go-to materials to date, however, are post-transition metal systems that are simple targets with only one accessible thermodynamically-stable composition. For transition metal systems, the phase stoichiometries and crystallography are much more complex. In the iron phosphide system alone, the known binary phases include Fe_3P, Fe_2P, FeP, FeP_2 and FeP_4. There is tremendous potential for this class of compounds as magnetic and electronic materials. With different transition metals or main group element combinations, the structures may be the same while the magnetic and electronic properties range widely. This affords a high degree of tunability for the preparation of heterometallic or doped materials. The use molecular designer single-source precursors affords the possibility of overcoming the synthetic difficulties encountered in producing a particular stoichiometry and/or phase by conventional methods. Our strategy in the metal phosphide system has been to employ metal carbonyl clusters such as $H_2Fe_3(CO)_9PR$ or $FeMn(CO)_8(\mu\text{-}PR_2)$ where the desired stoichiometry in the desired material can be built into the precursor. We have found these compounds to be effective precursors for the preparation of nanoparticles and thin films under the correct conditions, but the conversions are strongly dependent upon substituents, metals and solvents. The lessons we have learned in developing this system as a viable material synthesis methodology will be presented.

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Alle Interessenten sind zu diesem Vortrag herzlich eingeladen.

Die Professoren des Institutes
für Anorganische Chemie

Nähere Informationen bei Frau Professor Dr. E.Hey-Hawkins, Tel.: 36151