

**Carbon-oxygen functions:  
Their role in oxidation of and catalysis with elemental carbon**

Robert Schlögl

Fritz-Haber-Institut der Max-Planck-Gesellschaft  
Faradayweg 4-6, D-14195 Berlin, Germany

Elemental carbon forms a class of nanostructures since the discovery of fullerenes and nanotubes. This class of potential functional materials is investigated in many fields of physics and chemistry.

A paramount pre-condition to any application is a profound knowledge of the chemistry and stability of these materials in practical and reactive environments. Due to the thermodynamic boundary conditions the carbon-oxygen reaction is the most important single channel of events at the surface of any solid carbon.

The presentation will elucidate on fundamental aspects of this reaction, on the role of defects and microstructure for the reactivity and give some insights into analytical capabilities.

A practical example of nanocarbon application is discussed with the synthesis of styrene from ethylbenzene, one of the ten largest technical processes in chemical industry. It will be shown that nanocarbons offer an attractive alternative to conventional technologies.