



14 maggio ore 16:00  
Aula I, Dipartimento di Scienze Chimiche

## Seminario

### Chemical Vapour Transport for the Recovery of Critical Resources from Semi-Conductor and Ceramic Materials

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The criticality of inorganic resources is a worldwide and increasing problem for state-of-the-art processes as well as for future technologies. A steadily growing demand exceeds the availability of primary resources for an increasing number of elements, so that the recovery of these elements and their compounds from waste and end-of-life products receives increasing attention. Thereby, materials from already used products become a source of secondary resources available especially in highly developed countries.

Semiconductor and ceramic materials are vital for multiple fields of industry and development including future technologies. Especially, for semiconductor materials, their amount in a single application is typically limited, they are physically and chemically combined with other elements and compounds, and accordingly their separation in a recovery process is a major issue. For ceramics, high chemical and physical stability prove major issues for chemical processes to retrieve the elements from them without consumption of high amounts of energy.

In this lecture, the suitability and potential of chemical vapour transport processes is illuminated for examples from both classes of materials, semiconductors and ceramics to recover active materials via processes including the gas phase and limiting the amount of energy required. Abundant chemical compounds, such as water, chalcogenides, natural gas or hydrogen can be used as transport reagents to remove critical resources during the workup process of end-of-life products and to separate and collect them as elements and/or compounds with excellent purity. Thereby, chemical vapour transport is shown to be an interesting expansion of state-of-the-art recovery.

Prof.ssa Silvia Gross  
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Il Direttore del Dipartimento di Scienze  
Chimiche  
Prof. Stefano Mammi