

# ERSCP 2012: Workshop Design Sheet

## Workshop Design and Content

### **Title of Workshop \***

Critical raw materials for the high technology sector

### **Subtitle**

Possibilities to prevent supply shortages to secure a stable long-term development

### **Objectives**

Discovery of previously unused raw material sources along the entire product life cycles enabling an extension of primary production (geology, mining, processing and metallurgy) and/or recovery from secondary resources (pre-consumer as well as post-consumer wastes, collection, pretreatment and recycling). Which potentials are existing and what technologies are available? Which research and development activities are most appropriate?

### **Short Description of Workshop Outline (max. 2000 characters) \***

including Relevance and Background

The raw materials for the high technology industry, which were classified as critical regarding their future supply by the European Commission in July 2010, show high economic importance due to their versatile areas of application and their limited availability. They have a central position in the industrialised world despite their marginal production volume because they cannot be substituted by other materials in many applications within a short time. These elements include the rare earths (17 elements) as well as 13 further base materials (antimony, beryllium, cobalt, fluor spar, gallium, germanium, graphite, indium, magnesium, niobium, platinum group metals, tantalum and tungsten). Although lithium is not included in this group of materials with unstable availability on the market, it should also be considered due to its enormous growth in demand for batteries in the area of e-mobility. These elements find significant applications (e.g. phosphors in the lighting industry, permanent magnets in electric motors and generators, photovoltaic cells, etc.) in many growing market segments and therefore their demand, which sharply increased during the last years will further rise in the near future. However, some of these raw materials did not form their own ores in the earth crust. They are only obtained as byproducts of others and so their primary production cannot be independently expanded. Regarding other resources, especially the rare earth elements, powerful monopoly positions result in shortage of the raw materials supply and therefore to an enormous price increase. To guarantee the long term production of highly sophisticated products in Europe the appearance of supply bottlenecks must be avoided. Therefore, the local companies have to observe the market situation of the resources for their high technological products, because they are strongly dependent on imports of these raw materials and have to react due to the current problems. However, successful counteractive measures further need a sustainable economy of resources.

### **Expected Outcomes and Results**

Therefore, the proposed workshop should provide a platform to discuss various aspects on this topic along the entire product life cycle. This comprises the economic geology, mining, processing, metallurgy, collection, recycling and waste management as well as possibilities for substitutions. Above all, it should yield in evidences about the expected problems as well as possible solutions to counteract future supply difficulties. Finally, the results of the workshop should serve as a basis for developing a roadmap to improve the situation regarding the availability of raw materials specified earlier.