

CAN EUROPE PLAY A ROLE IN THE COMING MATERIALS TECHNOLOGY BOOM?

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Abstract

From the lithium batteries in our electric vehicles to our ability generate energy from the sun, wind and waves. From the smart phones in our pockets to the MRI machines that can see within us. Such products, that only a decade ago appeared locked in the realm of science fiction, now exist through the application of a new generation of metals, alloys and materials.

To be part of the development of two-dimensional materials that are stronger than steel; permanent magnets that will support frictionless high speed trains; and zero-density foams that form weightless insulation, Europe must have secure access to both raw materials, and highly skilled well-resourced researchers with the confidence to push ahead.

The European Union is far from self-sufficient in most raw materials. This is particularly the case for many of the critical materials that are essential for emerging “green” technologies. As the world shifts to the efficient production, storage and conservation of low carbon energy, it is not iron or copper or lead that have delivered opportunities. For long life light weight batteries for EV’s or mobile phones, high purity lithium, cobalt and graphite are essential. Efficient low friction electrical motors and wind turbines require rare earth elements for high strength permanent magnets.

Even though it is unlikely that Europe ever can become self-sufficient in all metals, high quality primary and secondary resources exist in Europe for most of the more important critical raw materials. As the markets for these materials is relatively small, a few small mines can provide all of Europe’s needs, and provide secure access, with the lowest possible environmental and social impact.

With sustained investment, Europe can provide leadership in the production of critical raw materials, and benefit greatly from the amazing downstream opportunities these materials will provide to this and the next generations.