

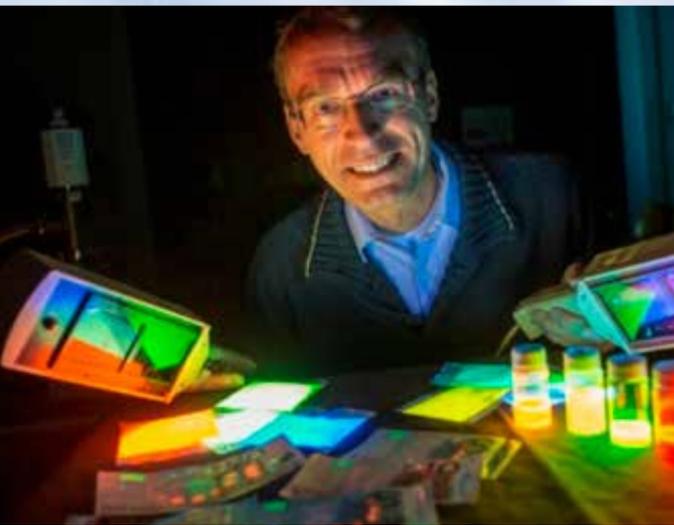


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CYCLE DE CONFÉRENCES

Séminaire général du département de physique  
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# RARE EARTHS FOR A SUSTAINABLE EARTH



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The themes Earth and Sustainability have been high on the scientific and political agenda for decades now. The Rare Earths or Lanthanides are however not well known. The name Lanthanides is derived from the Greek word “λανθανειν” (to lie hidden) and this group of elements, also hidden at the bottom of the periodic table, honored their name until China decided to limit the export of these elements. Only then the rare earths made it in the news and it became better known in society that these elements play a key role in many high tech applications, including many solutions to make our society more sustainable. The sharp rise in price (more than tenfold in one year) and supply problems for high tech companies made the world realize how important rare earths are and that it has not been wise to give to a single country a monopoly on the production of these strategically

important elements.

In this lecture an introduction will be given on the assumed rarity and production of rare earths. After this the unique chemical, magnetic and optical properties will be explained and related to the role of rare earths in sustainability, e.g. windmills, hybrid cars, batteries, catalysts and lighting. In the final part of the presentation the role in lighting and spectral conversion for solar cells will be explained in more detail. Rare earths play a key role in energy efficient lighting and are applied as efficient light emitters in almost all artificial light sources, including fluorescent tubes, displays and white light LEDs. The possibility to (adding up) and downconvert (cut into two) photons has the potential to raise the efficiency of solar cells significantly. The final topic will be money and the role of rare earths in the Euro crisis.

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17H-18H15  
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