

FEMS 30th Anniversary Education Tutorial with Granta Design

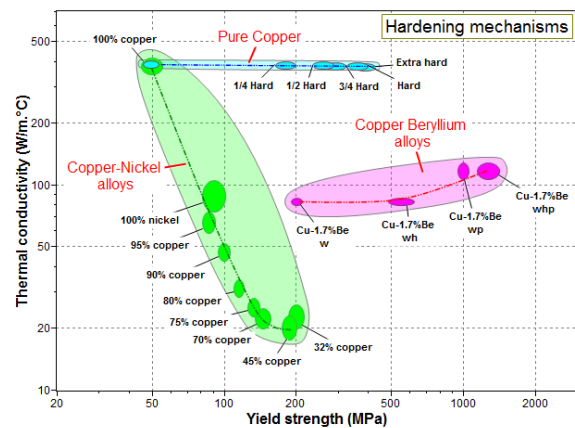
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Abstract

Half-day tutorial celebrating the development of visual and interactive materials teaching resources. Professor Mike Ashby and [Granta Design](#) in Cambridge (UK) has been working in this area for nearly 30 years, almost as long as FEMS itself. The comprehensive databases on materials and processes, the engaging Ashby property charts, and the sophisticated tools for materials selection, environmental impact assessment and hybrid material development have evolved with the help of feedback from Academics around the world, into world-leading teaching resources.

Today, there is no shortage of information about materials in textbooks, reports, tables in handbooks and on the internet. If you want to go deeper into the properties of materials though, and understand how these can be exploited and modified, this information is not always accessible or inspiring. Our approach aims to interactively and visually promote materials knowledge and understanding in Science, Engineering and Technology in higher education as well as industrial R&D. In this interactive tutorial, we want to show examples of how to find and use materials-related data as well as how to visualize and present materials knowledge or concepts using our software in an engaging way.



The aim of the tutorial is to demonstrate the power of the [CES EduPack](#) database and its tools for visualization, selection, design and materials science. **The objective** is for the participants to acquire sufficient skills to enable use of the software, which is supplied as a time-limited license with this tutorial.

In this Tutorial you will:

- Gain practical knowledge and skills on using our materials-related databases for Material Science and Engineering courses
- Get insights and tips on how to visualize properties in Ashby charts and make use of these
- Share teaching experiences with peers
- See Case Studies, Exercises, Lecture Units and other teaching resources available for educators
- Receive a 1 month free trial of CES EduPack

This Tutorial is suitable for:

Educators across a broad range of engineering, science and design disciplines.

Proposed Agenda

13.30pm – 14.15pm	Background and Introduction to the Software: CES EduPack 1 Materials Information Systems in Academia and Industry 2 The taxonomy of CES EduPack: <i>Data, Visualization and Tools</i> 3 Visualizing data on Elements, Materials and Processes 4 The tools of CES EduPack
14.15pm – 15.00pm	Exploring the data and charts <i>Interactive Demo of the software</i> <i>Hands-on exercises</i>
15.00pm – 15.30pm	Coffee & Refreshments Break
15.30pm – 16.15pm	Case Study illustrating use of the tools Selection, Eco Audit, The Synthesizer <i>Hands-on exercises</i>
16.15pm – 16.30pm	Materials Science and Engineering <i>The Phase Diagram Tool</i>
16.30pm – 17.00pm	Wrap-up, Discussion and Evaluation

Tutorial Organizer

The Tutorial will be led by **Dr. Claes Fredriksson**, who is a Senior Materials Education Consultant responsible for Training at Granta Design in Cambridge (UK). He has more than 15 years' experience teaching Materials-related subjects to undergraduate and post graduate students in Sweden, Canada, Belgium and the U.S.A, mainly in Mechanical Engineering. After gaining an MSc in Engineering Physics and PhD in Theoretical Physics he worked in both theoretical and experimental



research on polymers, metals and biomaterials. He has a passion for teaching and won a grant as part of Sweden's Excellence in Teaching Programme to enable him to teach in the U.S.A. and facilitate the cross-pollination of pedagogical approaches. Claes is an Associate Professor and works with academics across the world, collaborating on producing teaching resources and running CES EduPack training.

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