*"**Carbon fibre composites for structural applications : from scientific fundamentals to advanced engineering",*** by
Emeritus Professor Dr. Ir. **Ignaas VERPOEST**

How some materials can combine high stiffness and strength with low density, while others cannot, is an intriguing question. To understand it and to explore what future innovations can be expected, a brief excursion into materials science is necessary. The rules on how to create the desired mechanical properties in composites, taking into account their potential very strong anisotropy, will then be explained, with also a brief overview of the most important composite processing methods. But, insofar as textile technology was introduced as a key technology in the composites industry, which lead to its difficult "marriage" with a completely different technology, that of thermoplastic and thermoset polymers, it necessitated the development of modelling and simulation tools, to predict the various characteristics of composites with different types of 'preforms'. And finally, as an illustration of the ongoing research in that field, some recent developments at K.U. Leuven will be briefly presented.

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