

# Architected Structural Materials: A Parallel Between Nature and Engineering

## Abstract

Nature builds materials like an architect to obtain a variety of properties with a limited number of building blocks. In contrast, engineers have access to a wide range of constituent materials to fulfil a variety of requirements. The classical degrees of freedom for controlling the properties of man-made materials are the microstructure, or the macroscopic shape. Only recently, the architecture at the millimetre scale was perceived as an efficient way of expanding the range of properties offered by bulk materials. The aim of this paper is to compare the different strategies and to outline some observations on natural materials which may serve as inspiration to develop engineering architected materials.

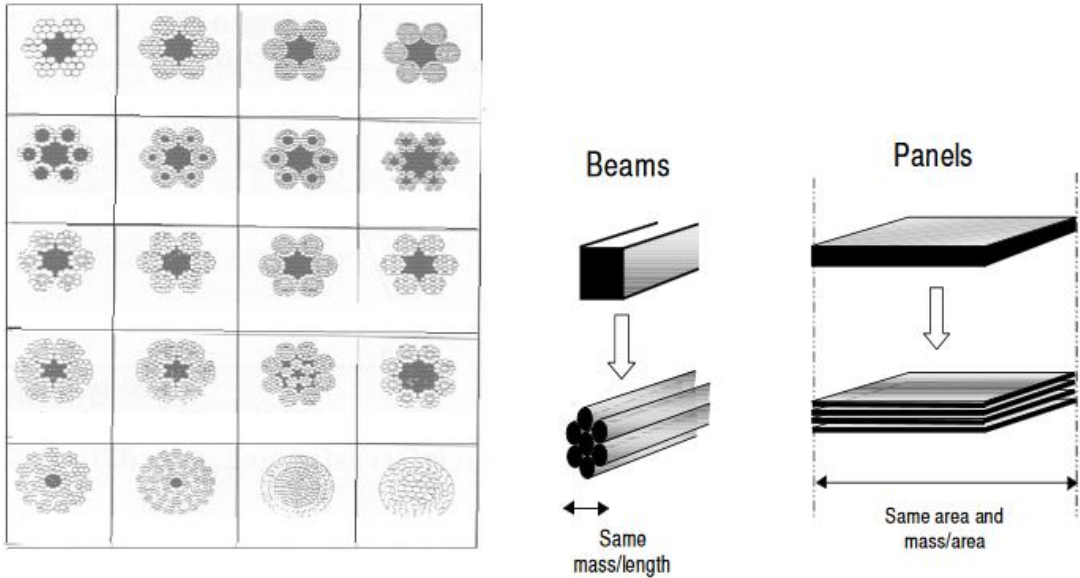


Figure 3: Engineering strategies to combine strength in tension and flexibility in bending