

## **Adaptive polymer composites with embedded shape memory elements**

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Adaptive materials integrate actuating and sensing technologies into a structural material. The approach discussed here is the integration of shape memory alloy (SMA) wires as actuating elements in fibre reinforced polymer composites. SMA's offer attractive potentials such as reversible strains of several percent, generation of high recovery stresses, and high power/weight ratios. The development of polymer composites with embedded SMA's can open new perspectives with respect to the development of engineering structures with adaptive shape, stiffness, damping and other properties. The development of these advanced composites with embedded SMA-wires is still in an early stage. An overview is given of the current state-of-the-art and of the many fundamental issues which require further research before these adaptive composites can be used in industrial applications.