UNIVERSITÀ DI TRENTO | Dipartimento di Ingegneria Industriale

MAY 26TH 2025, H. 11:00
SEMINAR ROOM, POLO FERRARI 2 - VIA SOMMARIVE 9, TRENTO

This talk gives an overview of the work on self-healing nanotextured vascular materials. It discusses some healing agents used in engineering self-healing materials as well as the fundamental physicochemical phenomena accompanying self-healing. It also discusses different fabrication methods used to form core–shell nanofiber mats employed in self-healing materials. The fundamental theoretical aspects of fracture mechanics in the framework of self-healing materials are outlined. The fracture toughness is described, including viscoelastic effects. Critical (catastrophic) and subcritical (fatigue) cracks and their growth are also discussed and described theoretically. The adhesion and cohesion energies in nanotextured self-healing materials are introduced as well, and the theory of the blister test for the two limiting cases of stiff and soft materials is developed. The effect of self-healing nanofiber mats on the toughening of ply surfaces in composites is discussed. Self-healing nanotextured coatings for corrosion protection are also discussed.

Speaker: Prof. A. L. Yarin
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Self-Healing Vascular Nanotextured Materials

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