SELF-HEALING MATERIALS FROM HYDROGEN BONDING AND MESOSCOPIC ORGANIZATION

Ludwik Leibler

Laboratoire Matière Molle et Chimie, Ecole Supérieure de Physique et Chimie Industrielles
ESPCI ParisTech 10 rue Vauquelin, 75005 Paris, France
Ludwik.leibler@espci.fr

Imagine an elastic solid that does not stick to itself. Yet, when broken or cut, it can be simply repaired by bringing together fractured surfaces to self-heal without need to apply heat or other stimuli. It recovers its initial properties. Such a material can be made by controlling supramolecular interactions, organization and dynamics and I will discuss design principles, underlying chemistry and physics as well as remaining challenges.