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“Toughness and Mechanical Reversibility of Polymer Gels with Dynamic Cross-links”

In this presentation, I will show an overview of toughness and mechanical reversibility (mechanical hysteresis under deformation) of polymer gels with dynamic cross-links: self-healing gels with reversible cross-links and slide-ring gels cross-linked by rings. The molecular dynamics of the cross-linking points dominates their mechanical and fracture properties. Also, I will propose a novel strategy to realize tough and instantly recoverable polymer gels based on a self-reinforcement concept.