

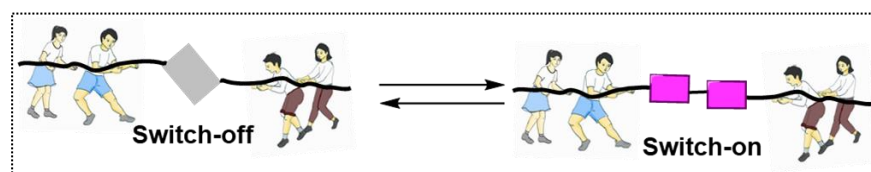
# Mechano-Adaptive Functional Polymers: Design and Applications

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## Abstract

Mechanoresponsive polymers, a unique class of smart materials, which contain force-sensitive molecular motifs that undergo chemical transformations in response to mechanical stimuli, producing detectable optical signals. Different types of mechano-adaptive motifs, like spiropyran, coumarin, rhodamine, perylene derivatives etc have been explored to prepare the mechano-adaptive polymers. Among the different mechano-adaptive motifs, spiropyran derivatives are widely used to prepare mechano-responsive polymers. In our work, we have explored rhodamine derivative to prepare mechano-adaptive materials based on epoxy-based elastomer, acrylic block copolymers. Interestingly, we have prepared self-healable mechano-adaptive polymer based on anthracene-triazoline dione (TAD) derivative conjugation. This talk will highlight the design of mechanophoric polymers and their versatility for stress sensing, self-healing, and adaptive material design, enabling real-time damage detection with applications in advanced materials, coating and sensor technologies.



Schematic representation of the Mechano-Adaptive polymer

## References

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