



Venerdì **19 maggio 2023** alle ore **15:00** presso l'aula **A**

**il Prof. Dominik Konkolewicz**

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terrà il seminario dal titolo:

## **Dynamic Networks: Responsiveness to Thermal, Electrical, and Chemical Stimuli**

Networks crosslinked with responsive linkers have numerous applications, from adaptable materials to reprocessable thermosets. Introduction of multiple responsive units enhances the material's performance when needed. Here, two distinct approaches to responsive networks are presented.

One direction focuses on equilibrium dynamic covalent and non-covalent chemistry, and typically the combination of fast exchanging supramolecular linkers with thermoresponsive dynamic covalent linkers. Materials with previously challenging synergies of self-healing and relaxation are developed while maintaining creep resistance. Introduction of carbon nanotubes (CNT), enhances the mechanical strength and electrical properties by taking advantage of unique Diels-Alder chemistry between the CNT surface and the linkers in the matrix.

The second direction focuses on chemical fuels to reinforce transiently polymer materials. Using carbodiimide fuels, responsive polymer materials are developed, where the mechanical properties can be enhanced by crosslinking acids to anhydrides, followed by subsequent hydrolysis back to the resting state. Distinct types of transitions in the states of matter are explored. This includes transitions between soluble to gel returning to soluble systems, as well as transitions between two types of gel materials. Finally, the impact of macromolecular architecture on the chemically fuelled structures is explored.

*La presenza della S. V. sarà molto gradita*

*Prof. Edmondo Benetti  
Dr. Francesca Lorandi*

*Il Direttore del Dipartimento  
Michele Maggini*