

## Unlocking Catalysis: Bridging Lab Expertise and Global Impact

**Have you ever considered chemistry as a paradoxical science?** In fact, it is both deeply connected to/and isolated from many if not all layers of the world. It rules both the smallest and the largest processes. Our seminar invites you to rethink your science from a different point of view and to include the hidden tensions into your chemical research.

- 1) On one side, chemical research, **is a closed world of its own**. Laboratories and reactors are fully controlled down to the molecular level and can only function as such. During their research education, PhD students learn to exclude all kinds of interfering factors (e.g., to insure reproducibility of results).
- 2) Yet, on the other side, chemical science's reach **extends far beyond those walls**:
  - Its resources come from all geographies and political regimes.
  - Its methods and techniques are derived from all branches of the natural sciences, including physics, biology, computer science, and, in the last years, even artificial intelligence!
  - Its infrastructures and academic institutions have been shaped by the policies of the 19th and 20th centuries.
  - The products of chemical science and industry and in particular of catalysis are everywhere and by far not always under control: Fertilizers, plastics, pharmaceuticals, and ammunition are the miracles that made modernity possible, but at the same time the villains that destroy many ecosystems on the planet.

### **Urgent need for a new chemical education: Including the excluded!**

Traditional chemical education seldom addresses this type of tension. It therefore seldom bridges the gap between the inner sanctum of labs and the vast world beyond. In particular Catalysis, the heart of transformation, demands a new perspective. Innovations in 21<sup>st</sup> century catalysis science can only work if the interactions of the chemical inner sphere with the "outer world" are reflected and integrated into the chemists' work and research. Only a chemical science that can consider its consequences, only a chemical science that mobilizes all external factors from artificial intelligence to biology to energy policy, will have a future.

This challenge is clearly recognized by the UniSysCat Cluster of Excellence. Its research and teaching initiatives might be viewed as a role model for the creative fusion of systemic chemistry and biology problems. Thus, incorporating the domains impacted by catalysis science and industry into this systemic approach is one of the Cluster's primary concerns. In keeping with these ideas, the Cluster cordially invites you to attend the ensuing seminar.

**Join our seminar “Redefining Catalysis: Beyond the Lab's Boundaries” and redefine your role in Catalysis!**

In our interactive sessions, we'll empower you to explore:

- The hidden connections between your lab and the planet.
- How chemistry's touch spans continents, science fields, and centuries.
- The catalytic impact that is reshaping ecosystems and industries.

Together, we will try to understand how to:

- Synthesize chemical mastery with socio-political awareness.
- Shape catalysis with insights from geography, history, and Anthropocene studies.
- Forge a future where chemistry takes on its consequences.

**Don't miss out on this chance to redefine your role in catalysis! Let's paint together a holistic portrait of its impact and possibilities!**

**Attention!** For our first session, please bring to the seminar two small, selected objects directly or indirectly related to the sciences of catalysis. We will need these small selected objects to start our reflection:

- one object from the "inside" of your respective research (a device, a substance, a product from the lab...).
- one object from the "outside world," with which catalysis is connected (a raw material, an industrial or agricultural product, an object related to a political conflict...).