**Showcasing research lead by Dr. Andi Di and Dr. Miao Zhang in collaboration with Profs. L. Bergström, and J. Yuan from Stockholm University, Sweden, and Prof. H. He from the Chinese Academy of Sciences, China.**

MXene-based solvent-responsive actuators with a polymer-intercalated gradient structure

The study presents $Ti_3C_2T_x$-based solvent-responsive actuators with a polymer-intercalated gradient structure, enabling rapid and specific actuation upon exposure to solvent vapors. This unique design combines pristine $Ti_3C_2T_x$ nanosheets as a passive layer with polymer-tethered $Ti_3C_2T_x$ as the active layer, creating gradient-driven bending. The actuators are simple to fabricate, remotely controllable *via* light, and demonstrate high performance in various applications, including chemical sensors, smart switches, and infrared camouflage. Their efficiency and adaptability make them ideal for use in harsh environments, such as toxic solvent monitoring and industrial chemical production.

As featured in:
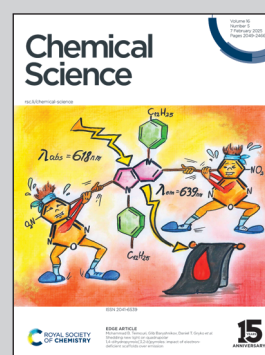
See Hongyan He, Lennart Bergström, Jiayin Yuan, Miao Zhang *et al.*, *Chem. Sci.*, 2025, **16**, 2191.

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