



Showcasing research from COODy-nano network (KU Leuven, Belgium; NYCU, Taiwan; Osaka University, Japan; TTI, Japan; and Institut Químic de Sarrià, Spain).

Gaining control on optical force by the stimulated-emission resonance effect

The resonance between an electronic transition of an object and incident photons can modify the radiation force, particularly at interfaces. A non-linear stimulated emission process can induce a pulling optical force, which has been experimentally demonstrated using trapped dye-doped particles. We integrate both pushing (excited state absorption) and pulling (stimulated emission) resonances, along with increased polarization from photoexcitation, to control the overall optical force. This validates the non-linear optical resonance theory, allowing precise optical force control, that ultimately should enable single molecule manipulation. The artwork was designed by Marie Liégeois.

As featured in:



See T. Kudo, S. Ito, H. Masuhara, J. Hofkens, R. Bresolí-Obach *et al.*, *Chem. Sci.*, 2023, **14**, 10087.