

Taking advantage of the mechanical bond in two lessons:

1) Operating an artificial molecular transporter

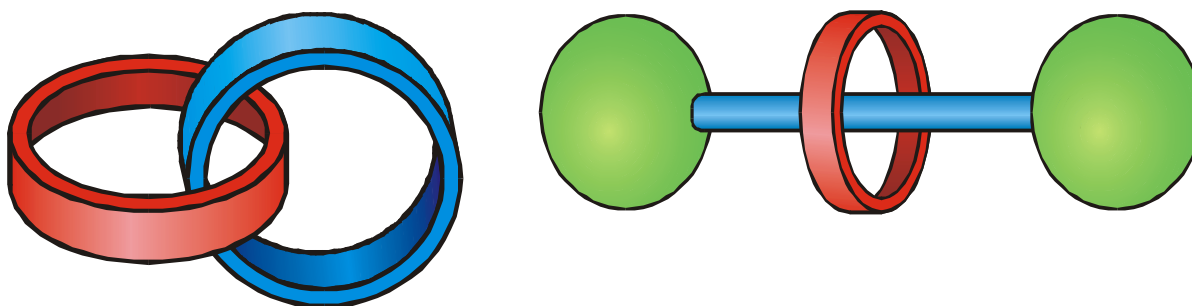
2) Remote electrochemical modulation of a pK_a

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The chemistry of catenanes and rotaxanes was first a chemical curiosity before the use of the mechanical bond spreads to many areas of research.¹ Mechanically interlocked compounds derived from switchable bistable [2]rotaxanes show great promise.² These systems can undergo dynamic, relative movements between their components, such as shuttling and circumrotation, enabling them to serve as stimuli-responsive switches. Yet, properties emanating exclusively from the presence of the mechanical bond are scarce. In this presentation, a first part will describe the design of a molecular transporter using a switchable rotaxane³ and a second topic will be devoted to the use of the mechanical bond as a messenger to thermodynamically couple two remote sites.^{4,5}



References

- [1] J. F. Stoddart, *Chem. Soc. Rev.*, **2009**, *38*, 1802-1820.
- [2] A. Coskun, M. Banaszak, R. D. Astumian, J. F. Stoddart, G. A. Grzybowski, *Chem. Soc. Rev.*, **2012**, *41*, 19-30.
- [3] C. Schäfer, G. Ragazzon, B. Colasson, M. La Rosa, S. Silvi, A. Credi, *Chemistry Open*, **2016**, *5*, 120-124.
- [4] G. Ragazzon, A. Credi, B. Colasson, *Chem. Eur. J.*, **2017**, *23*, 2149-2156.
- [5] G. Ragazzon, C. Schäfer, P. Franchi, S. Silvi, B. Colasson, M. Lucarini, A. Credi, *Proc. Natl. Acad. Sci. U.S.A.*, **2018**, *115*, 9385-9390.