Molecular motors

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Abstract

The 2016 Nobel Prize in Chemistry was awarded, in equal parts, to 3 researchers: J.-P. Sauvage (France), J. Frazer Stoodart (USA) and J. Feringa (The Netherlands) "for the design and synthesis of molecular machines", as presented by the Nobel Prize Commission. Different types of molecular machines were designed and synthesized, such as, in particular: catenanes, rotaxanes, ratchets, knots. The common point they have is that they are made of mobile parts which can move, independently, under the external stimuli. In my presentation I will focus on catenanes and rotaxanes and the research we performed in years 1995-2006 on their physical properties. In particular we have shown that rotaxanes that the microcycle on the rotaxane axis rotates under the applied electric field. The angular speed of the rotation depends on the applied external electric field allowing its control.