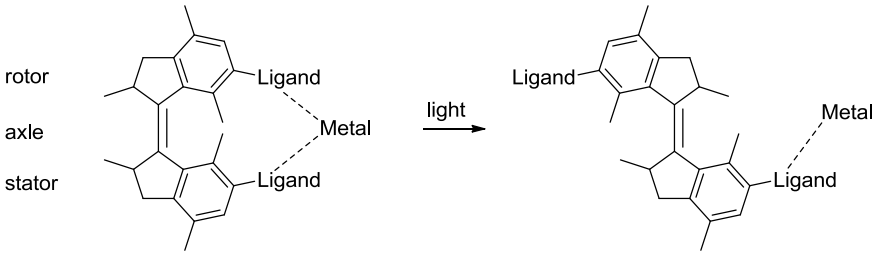
Towards breaking of coordination bonds by light-driven molecular motors

Thomas van Leeuwen, Ben L. Feringa
Stratingh Institute for Chemistry, University of Groningen, Nijenborgh 4, 9747 AG, Groningen, The Netherlands
t.van.leeuwen@rug.nl

Molecular motors and switches show great promise to perform mechanical functions at the nanoscale.[1] For the light driven molecular motor it is known that they can perform work,[2] but the question how much work and force the molecular motor is able to exert, still needs to be answered. In our ongoing efforts to use molecular motors for controlled motion and mechanical function at the nanoscale, we wish to get a deeper understanding of the strength of the molecular motor. One of several approaches to answer this question is to investigate whether the motors are able to break bonds (covalent and non-covalent). In this contribution the main focus will be on the synthesis of molecular motors which can form coordination bonds with metal ions. The systems are designed in such a way that photochemical $Z \rightarrow E$ isomerization could lead to the breaking of the coordination bonds. By varying the strength of the coordination bonds the power of the molecular motor can be examined.



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2. R. Eelkema, M. M. Pollard, J. Vicario, N. Katsonis, B. Serrano Ramon, C. W. M. Bastiaansen, D. J. Broer, B. L. Feringa, *Nature*, **2006**, *440*, 163.