عنوان مقاله:
Measuring generation of work by nanomotors

محل انتشار:
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خلاصه مقاله:
The project aims at addressing a key question in the field of synthetic molecular machinery: Cansynthetic molecular shuttles generate work cyclically at the single molecule level?Molecular shuttles are known to produce mechanical work during a single switching process. This work isobtained by taking advantage of the energy liberated as the shuttle relaxes back to equilibrium. However,considering the whole cycle, that is, shuttling forwards and backwards, it is generally admitted that they shouldnot be able to generate mechanical work, since they are systems that switch between equilibrium positions,with no built-in ratcheting mechanisms. Contrary to this analysis, the objective of this proposal is to proveexperimentally that molecular shuttles can generate work cyclically at the single molecule level, providedadequate sources of energy and suitable operation conditions. In particular, we will utilize an external varyingmechanical force to provide the ratcheting mechanism (asymmetry). We bring together chemical ..synthesis,single-molecule manipulation for designing aset of experiments to directly test our hypothesis

کلمات کلیدی:
Molecular motors; optical tweezers; DNA; biased Brownian motion