Fluorescence of single copper proteins : dynamic disorder and enhancement by a gold nanorod

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Propositions

accompanying the dissertation

Fluorescence of Single Copper Proteins: Dynamic Disorder and Enhancement by a Gold Nanorod

1. The shortened lifetimes observed in fluorescence-enhancement experiments using plasmonics are primarily due to nonradiative losses to the metal surfaces.
   Chapter 2 and 3 of this thesis.

2. Kinetic studies of biomolecular processes by plasmonic sensing require partial or full immobilization.
   Chapter 2 and 3 of this thesis.

3. Interphoton time-delay is an overlooked parameter in single-molecule fluorescence spectroscopy.
   Chapter 4 of this thesis.

4. Histograms of bright and dark times in the time trace of the fluorescence of a single molecule can hide rare events.
   Chapter 5 of this thesis.

5. Immobilization can alter catalytic activities of enzymes.
   Francesco Secundo, Chem. Soc. Rev. ***42*** *, 6250-6261(2013).*

6. The magnitude of fluorescence enhancement by plasmonics is only informative when the quantum yield of the unenhanced fluorophore is specified.
   Puchkova et al., Nano Lett. ***15****, 12(2015); Acuna et al., Science* ***338****, 506(2012); Yuan et al., Angewandte Chemie* ***52****, 1217-1221(2013).*

7. Contrary to what is reported by Yang et al., the relative orientation of donor and acceptor might provide the major contribution to the variation in the electron-transfer rates in single proteins.
   Yang et al., Science ***302****, 262-266 (2003).*

8. The term 'protein dynamics' does not give much insight into the detailed fluctuations as long as length and time scales are not specified.
   Kern et al., Nature ***450****, 964–972 (2007).*

9. 'Data available on request' is equivalent to 'data inaccessible'.

10. Publishers should restrict the usage of color to those suitable for both color-blind and non color-blind people.

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