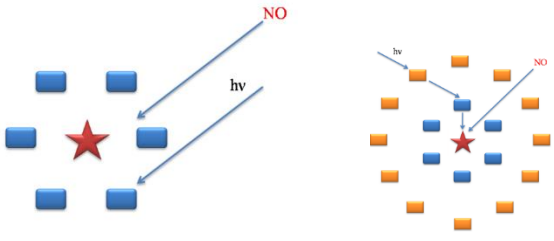
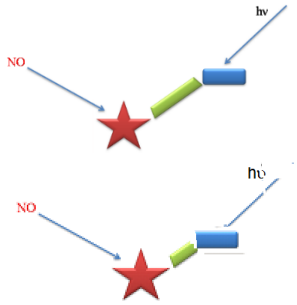
(electron transfer, intersystem crossing) in supermolecules, consisting of NO trap (hemin Fe^{2+}) and a fluorophore, by detecting fluorescence in absent and present NO (Fig. 9 IV). Binding of NO by the trap fragment should influence on efficiency of the spin exchange between excited fluorophore and the nitryl complex and, as consequence, on the fluorescence intensity. The ET rate can be exponentially dependent on the distance between donor and acceptor [44, 45]. At a distance of about 12-14 Å the ET rate is comparable with the rate of spontaneous emission of fluorophore acceptor (typically, $1/\tau_D = 10^8 - 10^9$ s^{-1}). Thus, this distance would be optimum for detection effect of change of fluorescence after the NO trapping by hemin $Fe2^+$. Intersystem crossing (ISC) is a process in which a singlet state nonradiatively transforms into a triplet state. According to theory [24] the intersystem crossing efficiancy also dependent on distance between the donor and acceptor. In the framework of FSEMA, to prevent a competing effect of the inductive resonance process, which is very strong at distances of 12 -14 Å, is indispensably to choose a fluorophore with a minimum overlap of its emission spectrum and the acceptor absorption spectrum. The menu of the Size-tunable fluorescence spectra of CdSe quantum dots (Fig. 8) offers the way for the selection of a corresponding pair in a supermolecule indicated in Fig. 8.



I **II**



III **IV**

Figure 9. Schematic illustration of NO trapping hemin (star) and systems of fluorophores: I- Direct energy transfer from a fluorescent donor (rectangle) to the hemin acceptor (star) (Model 1); II - Energy transfer via inductive resonance exciton cascade (light harvesting antenna), rectangles are fluorescent donor (Model 2); III - Donor (excited CdSe quantum dots, rectangle) acceptor) pair connected with a bridge (trapezium) (Model 3); IV - Electron donor (hemin $Fe2^+$, star) – electron acceptor (an exited fluorophore (rectangle) connected via a bridge optimum for exchange interaction (Model 4).

Suggested methods can be employed for research of processes of NO flux and adsorption in cells, tissues, organs, animals, biological liquids and the human body, in the future. The methods can make basis for design of portable simple and cheap biosensor for NO for wide use in research laboratories and medical practice.

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