Structural Considerations About The Possible Uses Of Electrogenerated Poly-Phenotiazines In Nanometric Biosystems

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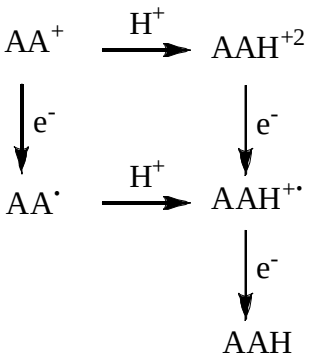
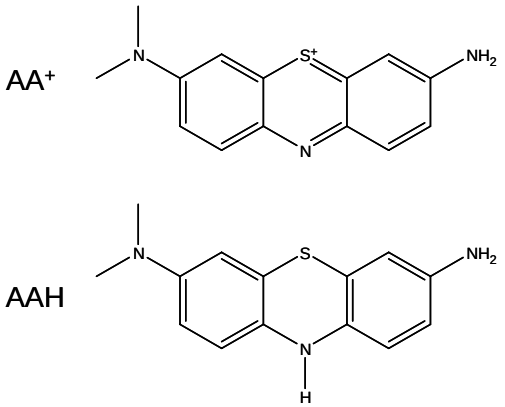
Nano-structure and electroactivity of electrogenerated *nanolayers* of poly-(*Azure A*) and poly-(*Methylene Blue*) have been compared. The spectroelectrochemical results prove clear the existence of two electroactive moieties integrated in the lattice of these poly-(*phenothiazines*), the phenothiazine ring and the new covalent link which fixes the monomers in the backbone of polymer [1]. The differences between both films is based in this covalent link, however, the spectroelectrochemical results point to the exchange of one fastest specie (anion) and one slow specie (cation) during the double electronic transference in both types of electroactive centres. The control of these electrochemical processes by electrical modulation together with the spectroscopic spectra makes possible to throw light in the mechanistic model of the electrochemical reaction of these polymers taking into account the coupled electronic/ionic transports [2], the trapped polarons (pinning model), structural configurations and inner solvent molecules. The promising uses of these types of materials in biosystems that spectroelectrochemical results are discussed from DFT calculations [3] on the monomer unities of the oxidized , reduced and intermediate species in different solvent media:





[1] J. Agrisuelas, D. Giménez-Romero, J.J. García-Jareño, F. Vicente. *Electrochem. Commun*. 8 (2006) 549-553.
[2] J. Agrisuelas, G. Gabrielli, J. García-Jareño, D. Giménez-Romero, H. Perrot, F. Vicente, *J Phys. Chem. C* (in press 2007)
[3]H. Möllerstedt, M. C. Piqueras, R. Crespo, H. Ottosson, *J. Am. Chem. Soc*. 2004, 126, 13938.