



Tetrathiafulvalene Porphyrins

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| Résumé en anglais | <p>Four tetrathiafulvalene (TTF)-annulated porphyrins 1-4 were synthesized and characterized. All contain a tetraphenylporphyrin (TPP) core onto which four, two, or one TTF subunits were annulated. Absorption and fluorescence spectroscopic studies together with electrochemical investigations reveal that interactions between the porphyrin system and the annulated TTF units take place in solution. The annulation of one or more TTF units to the porphyrin core has a profound effect on the reduction potentials associated with this latter framework, with positive shifts in the range of 0.105 to 0.355 V and 0.200 to 0.370 V for the first and second reduction potential, respectively, compared to the corresponding processes in the model compound TPP, 18. The redox potentials for the first oxidation of the TTF units are considerably shifted in 4 ($\Delta E_{ox1} = +0.285$ V) and 2 ($\Delta E_{ox1} = -0.140$ V), whereas for 1 and 3 these potentials remain within the region expected for a normal TTF unit. Considerable changes in the second oxidation potential associated with the TTF subunits were seen for 2 ($\Delta E_{ox1} = -0.085$) and 3 ($\Delta E_{ox1} = -0.175$). The emission spectra of 1-4 revealed that the porphyrin fluorescence is almost quenched in the neutral state of the TTF-annulated porphyrins, a finding that is consistent with substantial electron transfer taking place from the TTF subunits to the porphyrin core. Oxidation of the TTF unit(s) (TTF\rightarrowTTF$^{+}$) present in 1-4 leads to the emission intensity being restored.</p> |
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- [1] [http://okina.univ-angers.fr/publications?f\[author\]=2823](http://okina.univ-angers.fr/publications?f[author]=2823)
- [2] <http://okina.univ-angers.fr/eric.levillain/publications>
- [3] [http://okina.univ-angers.fr/publications?f\[author\]=2910](http://okina.univ-angers.fr/publications?f[author]=2910)
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