Photoinduced processes in functionalized and organized dye systems
Nguyen, V.A.

Citation for published version (APA):

General rights
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: http://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.
List of Abbreviations

Chapter 1

Highly Organized and Functionalized Dye Systems ............................................................. 1
  Interaction between light and matter ..................................................................................... 2
  1.1. Photoinduced processes in functionalized and organized systems ......................... 2
      1.1.1. Energy transfer ...................................................................................................... 3
      1.1.2. Photoinduced electron transfer .............................................................................. 5
      1.1.3. Proton coupled electron transfer (PCET) .............................................................. 8
  1.2. Organizing mediation in building highly organized and functionalized systems....... 9
      1.2.1. Linear alkanes as bridges .................................................................................... 10
      1.2.2. Helical architectures for controlling donor-acceptor separation ..................... 13
      1.2.3. Supramolecular host units as organizing media .................................................. 17
      1.2.4. Hydrogen bonds in the construction of supramolecules ..................................... 18
      1.2.5. Organization in the solid state ............................................................................. 20
  1.3. Scope and outline of the thesis ..................................................................................... 23
  1.4. References ..................................................................................................................... 25

Chapter 2

Fullerene C₆₀ – Perylene-3,4:9,10-bis(dicarboximide) Light-Harvesting Dyads: Spacer
Length And Bay-Substituent Effects On Intramolecular Singlet And Triplet Energy
Transfer ................................................................................................................................... 33
  2.1. Introduction ................................................................................................................... 35
  2.2. Results and Discussion ................................................................................................. 38
      2.2.1. Electrochemical properties ................................................................................ 38
      2.2.2. Steady-state UV-Vis Absorption and Emission ................................................ 41
      2.2.3. Time-resolved Spectroscopy ............................................................................ 48
  2.3. Conclusion .................................................................................................................... 57
  2.4. Experimental Section .................................................................................................... 58
  2.5. References ..................................................................................................................... 61
Appendix .................................................................................................................................. 67
Chapter 3

3.1. Introduction

3.2. Results and Discussion
3.2.1. Molecular Modeling
3.2.2. Electronic properties
3.2.3. Femtosecond Transient Absorption
3.2.4. Global and target analysis of visible excitation
3.2.5. Energetic considerations

3.3. Conclusions

3.4. Experimental Section

3.5. References

Chapter 4
Photoinduced Electron Transfer in Thin Films of Perylene Red – Pyrene Mixtures

4.1. Introduction

4.2. Results and discussion
4.2.1. UV-Vis and emission spectroscopy
4.2.2. Femtosecond transient absorption (fs-TA) spectroscopy
4.2.3. Global Analysis using Glotaran

4.3. Conclusion

4.4. Experimental part

4.5. References

Chapter 5
Structure, Spectroscopy and Reactivity of Covalently Linked Catechol-ortho-Quinone Systems: Aviram’s Hemi-Quinones Revisited

5.1. Introduction

5.2. Results and Discussion
5.2.1. HPLC experiments
5.2.2. Steady-state UV-Vis absorption spectroscopy
5.2.3. IR-spectroscopy