Phthalocyanines and analogues as components of photovoltaic and artificial photosynthetic devices

M.-E. Ragoussi, M. Ince, L. Tejerina, O. Trukhina, M. Medel, E. M. Llamas, J. Guilleme, B. Ballesteros, G. de la Torre, M. V. Martinez-Diaz, G. Bottari, M. Urbani, T. Torres

Departamento de Química Orgánica, Universidad Autónoma de Madrid, 28049-Madrid, Spain

Porphyrinoids are employed as components of photovoltaic and artificial photosynthetic devices [1-3]. However, synthetic porphyrin analogues such as phthalocyanines [4] have the advantage, as photon harvesters, of exhibiting very high extinction coefficients in a wavelength range that extends to around 700 nm, where the maximum of the solar photon flux occurs. Consequently, Pcs have emerged as excellent light harvesting antennas for incorporation into donor-acceptor systems, mainly in connection with carbon nanostructures as acceptor moieties. During this talk an overview of the results obtained by our group in Madrid will be given [5,6,7].

References

[1] Moore GF, Hambourger M, Gervaldo M, Poluektov OG, Rajh T, Gust D, Moore TA and Moore AL *J. Am. Chem. Soc*., **2008**; 130; 10466-10467.
[2] Fukuzumi S and Kojima T J. *Mater. Chem.* **2008**; 18; 1427-1439.
[3] Bessho T, Zakeeruddin SM, Yeh C-Y, Diau E W-G and Graetzel M *Angew. Chem. Int. Ed.* **2010**; 49; 6646-6649.
[4] de la Torre G, Claessens CG and Torres T *Chem. Commun.* **2007**; 2000-2015.
[5] Martínez-Díaz MD, de la Torre G, Torres T *Chem. Commun.* **2010**, 46, 7090-7108
[6] Bottari G, de la Torre G, Guldi DM and Torres T *Chem. Rev.* **2010**; 110; 6768– 6816
[7] Ragoussi ME, Cid JJ, Yum, JH, De la Torre G, Di Censo D. Graetzel M, Nazeeruddin MK and Torres T *Angew. Chem. Int. Ed. Eng.* **2012**; 51; 4375 –4378