Exploring new molecular hydrogelators for therapeutical applications

Serena Carelli,[1,2] Bibiana Izquierdo,[1,2] Oriol Penon,[1,2] David Amabilino,[3] Lluïsa Pérez-García[1,2]

[1]Department of Pharmacology and Therapeutical Chemistry, Faculty of Pharmacy, University of Barcelona, 08028, Spain. [2]Institute of Nanoscience and Nanotechnology UB (IN2UB), University of Barcelona, Spain. [3]Institut de Ciència de Materials de Barcelona-CSIC, Bellaterra, Spain.

mlperez@ub.edu

Hydrogels are very promising materials for a number of therapeutical applications,[1] amongst them, controlled drug release. The release properties are controlled by the constitution and chemical properties of the gelator, and depend on the ultimate use of the new nanomaterial.

In this context, we have been interested in finding different molecular entities that could be used for the preparation of nanomaterials for the local release of both photosensitizers for photodynamic therapy[2] and anionic drugs for cancer therapy.[3]

In the poster we will report the preparation of new porphyrin based and imidazolium based gelators, designed to self-organize in water and other therapeutically compatible solvents. The experimental conditions for the gelification process (see Figure) will be established, and characterization of the new materials will be carried out by optical, scanning electron, transmission electron and atomic force microscopies. Experiments of incorporation of selected drugs and the study of their controlled release are also aimed at.

Gels formed in acetonitrile using imidazolium based gelators.

References

1. N.A. Peppas, J.Z. Hilt, A. Khademhosseini, R. Langer, *Adv. Mater.*, **18**, (2006), 1345 -1360.
2. H.J. Hah, G. Kim, Y-E. Koo Lee, D.A. Orringer, O. Sagher, M.A. Philbert, R. Kopelman, *Macromol. Biosci.*, *11*, (2011), 90 – 99.
3. W.T. Truong, Y.Su, J.T. Meijer, P.Thordarson, F. Braet, *Chem. Asian J.*, *6*, (2011), 30-42.

Acknowledgements. This work has been supported by the Ministerio de Educación y Ciencia (MICINN-Spain) through project TEC2008-06883-C03-02 and the Generalitat de Catalunya (2009SGR158). S. P. thanks the Leonardo da Vinci program for a fellowship. O.P. thanks the MEC for a predoctoral grant.