

# IMPACT OF SOME NSAIDS ON VOLUME PHASE TRANSITION IN POEGMAS HYDROGELS

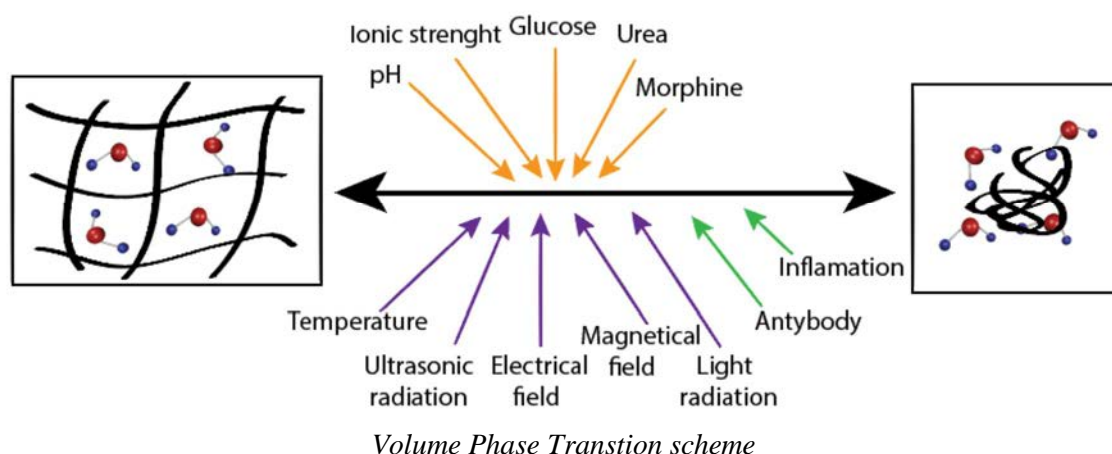
*Krzysztof Piechocki, Marcin Kozanecki*

*Lodz University of Technology, Department of Molecular Physics,  
Zeromskiego 116, 90-924 Lodz, Poland*

*krzysztof.piechocki@p.lodz.pl*

Stimuli responsive polymer hydrogels may be sensitive to physical (temperature, electrical or magnetic fields) and chemical (pH, ion factors, glucose, morphine and many other chemical compounds). An abrupt, reversible transition under a small change in environmental conditions is the most demanding behavior of such systems. From biomedical point of view non-toxicity and non-immunogenicity are also required. Recently, the special interest is focused on the thermo-responsive hydrogels exhibiting volume phase transition (VPT). They are synthesized from the polymers with lower or upper critical solution temperature and have been successfully applied in many fields, also as a carrier for controlled drug delivery into the living organisms. Thermally induced VPT results from the weakening of polymer–water and simultaneously the strengthening of polymer–polymer interactions [1]. These changes leads to sudden collapse of polymer network and to push out the water. This mechanism may accelerate the drug release process in a case of drug carrier systems [2].

In this work the biocompatible, non-toxic, thermo-sensitive hydrogels based on Poly(oligo(ethylene glycol)methyl ether methacrylate) – POEGMAs – were studied. Impact of molecular mass of used monomers, density of cross-linking and influence of selected non-steroidal anti-inflammatory drugs (aspirin, ibuprofen, naproxen) on VPT temperature and the dynamics was studied. Thermo-Optical Analysis and Dynamic Scanning Calorimetry were used to solve this problem. Swelling properties of obtained materials were compared by gravimetric methods.



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## References:

- [1] Qiu Y. Park K. *Adv. Drug Deliv. Rev.* 2012, 64, 49.
- [2] Xia M. Cheng Y. Theato P. Zhu M. *Macromol. Chem. and Phys.* 2015, 216 (23), 2230.