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## Gelatin-based electro-responsive hydrogel for biomedical applications

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Hydrogels are polymeric materials with three dimensional, cross-linked, hydrophilic structure and their water content which is much more advantageous in terms of their use in tissue engineering, biomedical and biotechnological fields compared to other synthetic biocompatible materials due to their porous and soft structure. Intelligent polymers are polymeric materials which show mechanical and physical changes with external stimuli such as pH, temperature, electric, thus they have widespread usage in controlled drug delivery systems that is one of the most important biomedical fields used in the treatment of diseases such as cancer, chronic pain, which require controlled drug release in the long run. In the light of this information, we produced gelatin-based electro-responsive hydrogels for controlled drug delivery. The obtained hydrogels were characterized by FT-IR and SEM analyses. For the release experiments, a model drug was loaded to the hydrogels and then release kinetics of drug from the gelatin-based hydrogel were investigated under the different voltage conditions. The obtained results showed that gelatin-based hydrogel could be a promising electro-responsive biomaterial for treatment of cancer diseases.

### Recent Publications:

1. Didem Aycan, Neslihan Alemdar, "Development of pH-responsive chitosan-based hydrogel modified with bone ash for controlled release of amoxicillin" *Carbohydrate Polymers*, 184 (2018) 401.
2. Alemdar Neslihan, Leijten Jeroen, Camci Unal Gulden, Hjortnaes Jesper, Ribas Joao, Paul Arghya, Mostafalu Pooria, Gaharwar Akhilesh K, Qiu Yiling, Sonkusale Sameer, Liao Rongli, Khademhosseini Ali "Oxygen-Generating Photo-Cross-Linkable Hydrogels Support Cardiac Progenitor Cell Survival by Reducing Hypoxia-Induced Necrosis", *ACS Biomaterials Science & Engineering*, 3 (2017) 1964.
3. Neslihan Alemdar, "Fabrication of a novel bone ash-reinforced gelatin/alginate hyaluronic acid composite film for controlled drug delivery", *Carbohydrate Polymers*, 151 (2016) 1019.
4. Pelin Yazgan-Birgi, Neslihan Alemdar, A. Tuncer Erciyes, "Styrenated urethane oil synthesis via CuAAC "click" chemistry approach", *Prog. Org. Coat.* 84 (2015) 107.
5. Nafiseh Masoumi, Nasim Annabi, Alexander Assmann, Benjamin L. Larson, Jesper Hjortnaes, Neslihan Alemdar, Mahshid Kharaziha, Keefe B. Manning, John E. Mayer Jr., Ali Khademhosseini, "Tri-layered elastomeric scaffolds for engineering heart valve leaflets", *Biomaterials* 35 (2014) 7774.

### Biography

Neslihan Alemdar is currently Assistant Professor in the Department of Chemical Engineering at Marmara University, Istanbul, Turkey. Alemdar received her Ph.D. degree from Istanbul Technical University in Chemical Engineering in 2009. During 2011–2013, She worked as a Post-Doctoral Fellowship at Harvard-MIT Health Sciences and Technology Institute & Massachusetts Institute of Technology (Harvard-MIT) at Tissue Engineering Field (USA). Her research interests are focused on the synthesis of smart polymers and characterization and its application for different areas especially the fabrication of hydrogel for tissue engineering application and drug delivery systems.

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