



## ***Symposium V : Hydrogels: syntheses, characterization, processing and application***

### **Scope of the Symposium**

Hydrogels are based on hydrophilic polymers that are cross-linked either chemically or physically to yield a three dimensional (3D) matrix with high water retention like the highly aqueous environment of the native extracellular matrix (ECM). The current ongoing development of hydrogels is primarily based on synthetic and/or natural-based materials as well as various sol phase transition schemes and peptide conjugated polymers. A wide range of applications from tech- and agro-industries, tissue engineering, drug delivery systems, biomedical to soft electronics also involve hydrogels due to their versatile nature. In tissue engineering and regenerative medicine, hydrogels exhibit innovative possibilities for repairing and regenerating diseased and injured tissues and organs; mainly, when self-healable hydrogels are involved; as they are capable of recapitulating the dynamic remodeling phase in tissue regeneration. Moreover, hydrogels manufactured via conductive polymers or embedded with conductive nanomaterial's are being investigated for the replacement of electrically active and elastic tissues, as well as key components in bioelectronics, bioactuators and soft-robots application. Specifically, breakthrough developments are being achieved from synergetic multidisciplinary efforts involving the fields of physics, chemistry, biology, materials science and engineering. The symposium focuses on the development, characterization, processing and applications of hydrogels, from basic research to more advanced applications. Abstracts will be focused on, but not limited to the following areas: - Tissue engineering hydrogels for promoting healing and restoring homeostasis; - Self-healing hydrogels; - Hydrogels for 3D printing; - Mechanically tough and electrically active hydrogels for various biomedical and bioelectronics applications; - Hydrogels with bio-functionalities capable of interfacing between living cells and tissues; - Wearable, flexible and soft electronics; - Implantable electronics and soft robots.

### **Abstracts will be solicited in (but not limited to) the following areas**

- *Soft materials, soft and flexible electronics, biomaterials, tissue engineering, drug delivery system, bioelectronics, 3D printing, soft robots, conductive polymers, healthcare technology, biosensors*

### **Tentative list of invited speakers (To be confirmed)**

**Alireza Dolatshahi-Pirouz** (Technical University of Denmark - DTU - Denmark) **Huanan Wang** (Dalian University Technical - DUT - China) **Mathilde Julienne Gisele Champeau Ferreira** (Universidade Federal do ABC - UFABC - Brazil) **Ctia Cristina Caplo Ornelas Megiatto** (Universidade de Campinas - Unicamp - Brazil) **Marcos Akira d'vila** (Universidade de Campinas - Unicamp - Brazil) **Gorka Orive** (Universidad del Pas Vasco - UPV - Spain) **Manuel Mara Mazo Vega** (University of Navarra - Spain) **Shrike Zhang** (Harvard Medical School; Brigham and Women's Hospital - USA) .

### **Symposium Organizers**

**Alireza Dolatshahi-Pirouz** (Technical University of Denmark - DTU - Denmark) **Tatiane Eufrazio-da-Silva (coordinator)** (Technical University of Denmark - DTU - Denmark) **Guilherme Marriz de Oliveira Barra** (Universidade Federal de Santa Catarina - UFSC - Brazil) **Marcos Akira d'vila** (Universidade de Campinas - Unicamp) .

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