ABSTRACT SUBMISSION

To be submitted before Feb. 22nd, 2019 online at https://biomatsante.sciencesconf.org

Biomat – Materials for Health Congress – June 3-7 2019 – La Grande Motte, France

Degradable multi(aryl-azide) star copolymer as universal photo-crosslinker for elastomeric scaffolds

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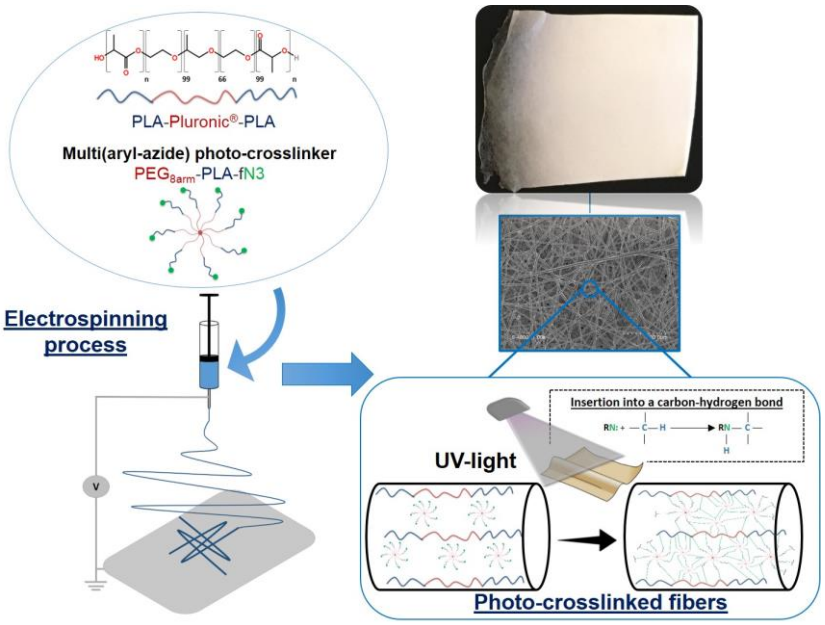
Type of contribution desired: ■ **ORAL** ☐ **POSTER**

☐ Candidating to best presentation award for PhD students/young scientists* ?
(*PhD defense in 2018 or before the end of 2019".

Keywords: Degradable elastomers, Tissue engineering, Electrospinning

ABSTRACT

Degradable elastomers with elastic properties close to those of soft tissues are in great demand for tissue-engineering[1]. Most degradable elastomers developed so far are based on functional low molecular weight pre-polymers that are combined with molecular crosslinkers to yield elastomeric 3D networks[2]. To overcome this limitation, we firstly developed a new star-shaped macromolecular multi(aryl-azide) photo-crosslinker based on PEG_{8arm}-PLA copolymer that has the ability to efficiently crosslink any polymer containing C-H bonds independently of its molecular weight and without the need for pre-functionalization[3]. Then, we proposed the development of elastomeric scaffolds for soft tissue reconstruction based on electrospun photo-crosslinked high molecular weight PLA-Pluronic®-PLA[4] fibers (Scheme. 1). These elastomeric fibrous scaffolds were finally evaluated in terms of mechanical properties, degradation properties and cytocompatibility.



Scheme 1: Design of elastic micro-fibrous scaffolds based on degradable multi(aryl-azide) photo-crosslinkers.

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