Public Abstract

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Title:DEVELOPMENT OF ELECTROSPUN SYNTHETIC BIOABSORBABLE FIBERS FOR A NOVEL BIONANOCOMPOSITE HERNIA REPAIR MATERIAL

In order to create a more durable and biocompatible hernia repair mesh, a novel bionanocomposite material based on the crosslinking of bioabsorbable polymer fibers to decellularized porcine diaphragm tissue is proposed. The first step in creating this bionanocomposite material is to develop a method to produce and functionalize bioabsorbable polymer fibers. Electrospinning was chosen for its effectiveness and cost efficiency in producing polymer fibers in the sub-micron range. For this project, an electrospinning solution consisting of the degradable polymer polycaprolactone is treated with the aminolyzing agent ethylenediamine in order to add amine groups to the resulting electrospun fibers. Amine-group functionalization is measured using FT-IR scans of electrospun test samples. The degree of sample functionalization is measured as a numeric area of the respective amine peaks from the resulting FT-IR absorbance graphs. Current research findings indicate that it is possible to produce functionalized polycaprolactone fibers in the sub-micron range based on this experimental method.