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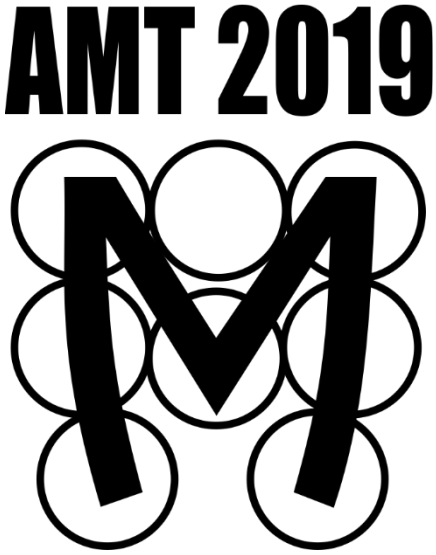

Programme & Abstracts

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Mechanical Properties of Electrospun Non-woven PMMA Mats Produced with Positive and Negative Voltage Polarities

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Electrospun polymer fibers due to their mechanical properties, surface-to-volume ratio and porosity are used extensively in various applications like air filtration and tissue engineering [1,2]. Electrospinning technique allows control of structure and surface properties, for instance by changing surface potential and chemical composition [3]. One of the parameters is voltage polarity, which is responsible for reorientation of functional groups in polymer chains due to accumulation of charges at the surface of the liquid jet during electrospinning. In this study we aim to verify the effect of voltage polarity on structural and mechanical properties of polymethyl metacrylate (PMMA).

The PMMA solution in dimethyloformamide (DMF) was used to produce electrospun fibers with positive (PMMA+) and negative (PMMA-) voltage polarity. The mechanical tests on PMMA mats were performed using fiber tensile module equipped with 1 N cell. Crystallinity was investigated using differential scanning calorimeter (DSC). Results showed the highest crystallinity and mechanical properties for the PMMA+. In summary, we show that voltage polarity is another key parameter affecting mechanical and structural properties of electrospun PMMA fibers.

Acknowledgments

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