3D Fabrication of Bone Structures, Based on FibreTuff

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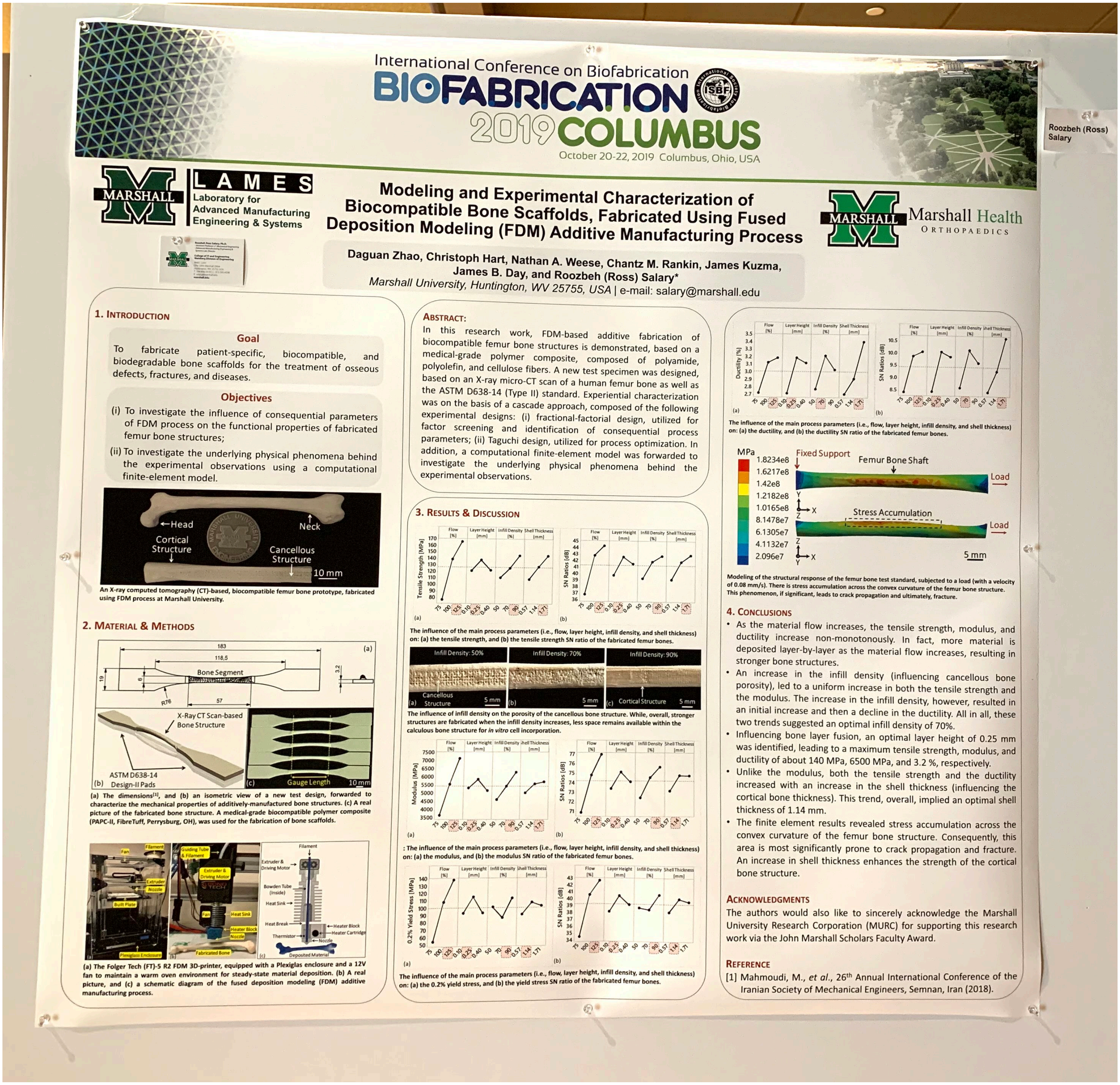
FibreTuff II polymer filaments were used for the fabrication of biocompatible bone structures using material extrusion (fused filament fabrication) manufacturing technique, as illustrated in Figure 1. A multitude of process parameters were optimized with the aim to obtain strong, dimensionally accurate, and repeatable bone structures. It was experimentally observed that nozzle size, bed temperature, oven temperature, cooling rate, and print speed would significantly affect the quality as well as the performance of the fabricated bones.

Figure 1: A 3D-printed bone, composed of Polyamide, Polyolefin and Cellulose fiber (FibreTuff, Perrysburg, OH), fabricated at Marshall University's Lab for Advanced Manufacturing and Engineering Systems (LAMES).

Dr. Ross Salary with Engineering Student's at Marshall University (LAMES)



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