Abstract Submitted
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Visualizing flow inside a bone porous medium using an MRI machine.[1] SUYUE HAN, TODD CURRIER, University of Massachusetts Amherst, MAHDIAR EDRAKI, Northeastern University, BOYUAN LIU, University of Massachusetts Amherst, MAUREEN LYNCH, University of Colorado Boulder, YAHYA MODARRES-SADEGHI, University of Massachusetts Amherst — We have used Phase-Contrast Magnetic Resonance Imaging (PC-MRI) flow measurement to quantify flow inside a 3D-printed artificial scaffold model to understand the flow behavior inside the 3D model of bone metastasis due to an applied perfusion. In order to perform the test using an MRI machine, a nonmagnetic water tunnel was designed and built. A 3D surface model created from a micro-CT scan of an artificial scaffold model was used to make the 3D-printed scaffold model. The 3D-printed scaffold was placed in the test section of the water tunnel inside the MRI machine. The flow velocity was varied over a range and images were captured using the MRI machine. The phase and magnitude data from the MRI experiment were then processed using an in-house code to quantify the flow inside the scaffold.

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