

Abstract Submitted
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Development of refractively matched hydrogels for PIV applications MARGARET BYRON, EVAN VARIANO, University of California, Berkeley — We present a technique for fabricating models whose refractive indices are close to that of water, using two hydrogel polymers. The models' transparency and matched refractive index makes them useful for experiments in Refractive-Index-Matched Particle Image Velocimetry (RIM-PIV). The materials used –polyacrylamide and agarose hydrogel– are inexpensive and can be cast into a variety of desired shapes using injection molding. The models' utility is demonstrated with sets of vector fields, calculated with standard PIV algorithms; vectors can be obtained from the surrounding flowfield and from interior points within the model. Using these data, we calculate solid-body rotation and translation in combination with fluid-phase velocities, and investigate coupling between the two.

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