

Abstract Submitted  
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**Tomographic PIV measurement in complex geometries of nasal cavity**<sup>1</sup> SUNGHYUK IM, HYUNG JIN SUNG, KAIST, SUNG KYUN KIM, Konkuk University — Flow inside a scaled model of nasal cavity was measured by tomographic PIV. The model was constructed with transparent silicon and a refractive index of working fluid was matched to the model index by mixing glycerol and water. Four cameras and double pulse laser system were used for tomographic PIV. To obtain a high SNR, red fluorescence particles and longpass glass filters were used. Three-dimensional (3D) surface geometry of nasal cavity model from the stereolithography file (.stl) was converted to volume data by adopting the morphological closing and flood-filling algorithm. Coordinates and scaling of the model were adjusted by comparing time series stacking of 3D particle position from volume self-calibration. The geometry information was used to distinguish the fluid and solid region in the tomographic reconstruction procedure. Flow velocity field was calculated from 3D cross-correlation of reconstructed voxel intensities.

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