Contribution ID: **809** Type: **Oral 20 Minutes**

Tomographic PIV of low to high Re flow through well-ordered porous media

Monday, 14 May 2018 10:05 (15 minutes)

Pressure-driven flow within the plane of a confined thin porous medium takes place in a number of natural and industrial processes. This includes flow during manufacturing of fibre reinforced polymer composites with liquid moulding processes, passive mixing in microfluidic systems and paper making. The thin porous media considered here is a simplified, well-structured model of a porous media where the solid parts have the shape of vertical cylinders placed on equal interspatial distance from each other in a quadratic pattern. The array of cylinders are confined between two parallel plates, hence the permeability depends on both the diameter and height of the cylinders, as well as their interspatial distance. In order to study the flow tomographic Particle Image Velocimetry is used and the fluid is indexed matched so that a whole volume of the flow can be scrutinized without optical distortion in each measurement. The results reveal that the averaged flow field changes substantially and that the wakes formed behind the cylinders plays a major role.

References

Acceptance of Terms and Conditions

Click here to agree

Primary authors: Dr LARSSON, Sofia (Fluid mechanics, Luleå University of Technology); Prof. LUNDSTRÖM, Staffan (Fluid Mechanics, Luleå University of Technology, Sweden); Dr LYCKSAM, Henrik (luid Mechanics, Luleå University of Technology, Sweden)

Presenter: Dr LARSSON, Sofia (Fluid mechanics, Luleå University of Technology)

Session Classification: Parallel 1-D

Track Classification: GS 3: Experimental achievements