

## Preparation of macroporous scaffolds with holes in pore walls and pressure driven flows through them

Soumyajyoti Chatterjee<sup>#1</sup>, Aditi Potdar<sup>#2</sup>, Simon Kuhn<sup>2\*</sup> and Guruswamy Kumaraswamy<sup>1\*</sup>

<sup>1</sup> J-101, Polymers and Advanced Materials Laboratory, Complex Fluids and Polymer Engineering, Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Pune-411008, Maharashtra, India.

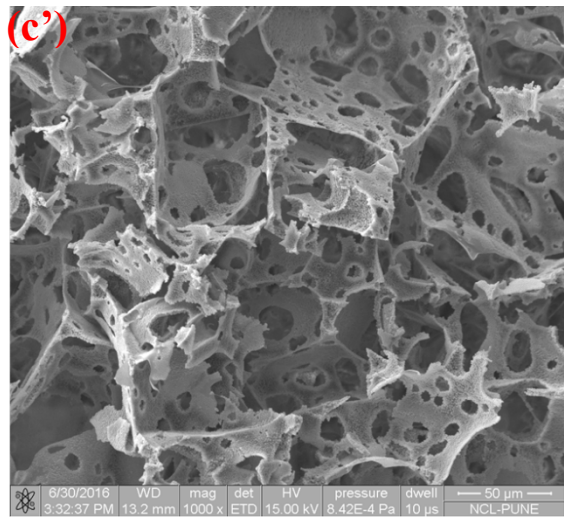
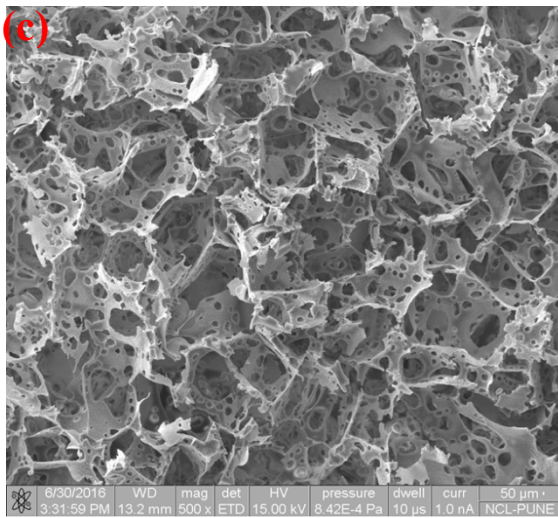
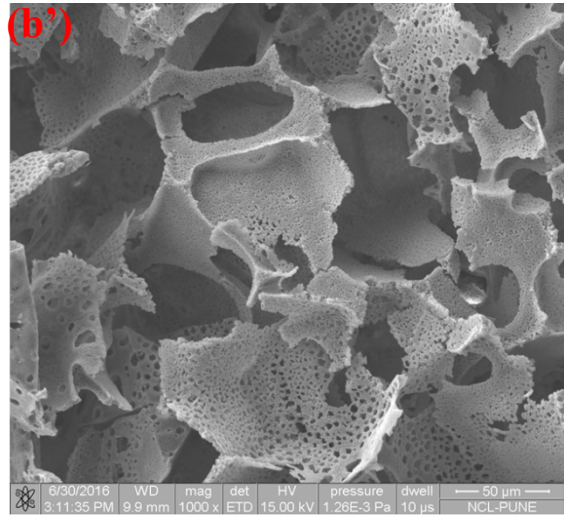
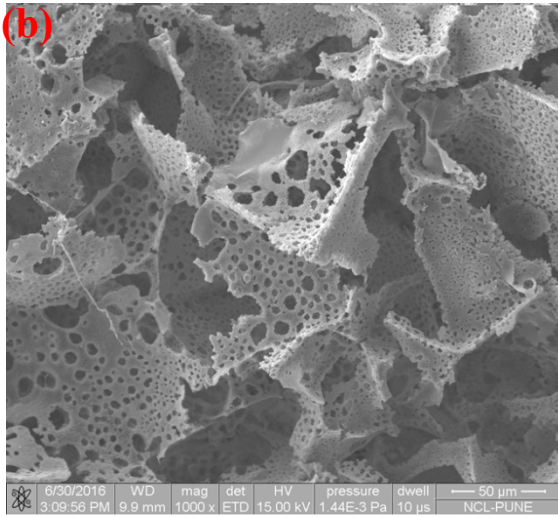
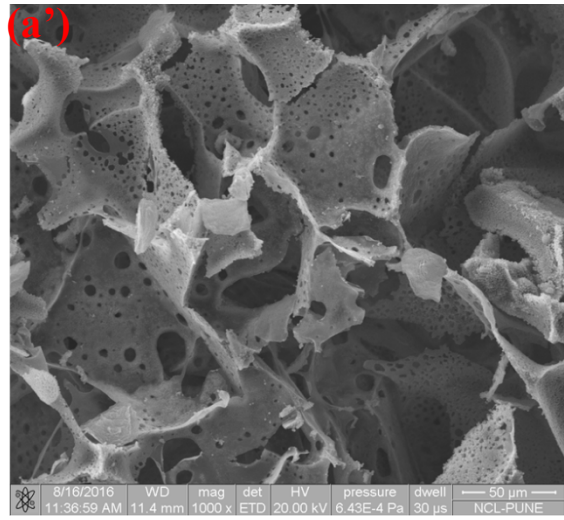
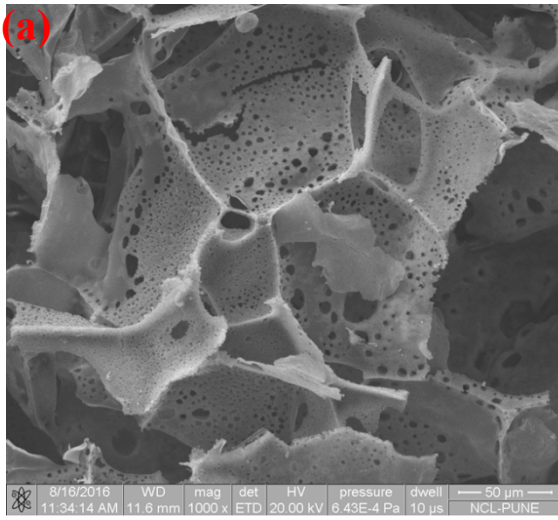
<sup>2</sup> KU Leuven, Department of Chemical Engineering, Celestijnenlaan 200F, 3001 Leuven, Belgium.

<sup>#</sup> Equal contribution

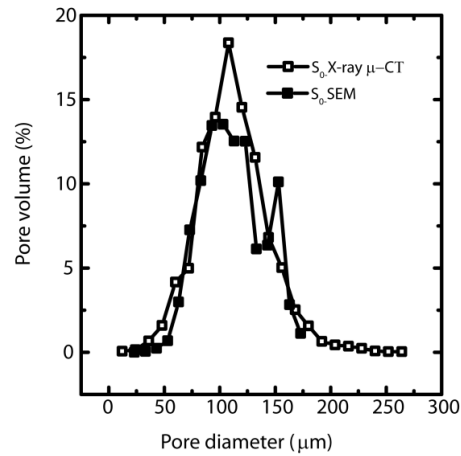
<sup>\*</sup> Corresponding authors: [simon.kuhn@kuleuven.be](mailto:simon.kuhn@kuleuven.be) and [g.kumaraswamy@ncl.res.in](mailto:g.kumaraswamy@ncl.res.in)

**Table S1:** Predicted Peclet number of each compartment obtained by fitting the experimental data with the two PFRs in parallel model.

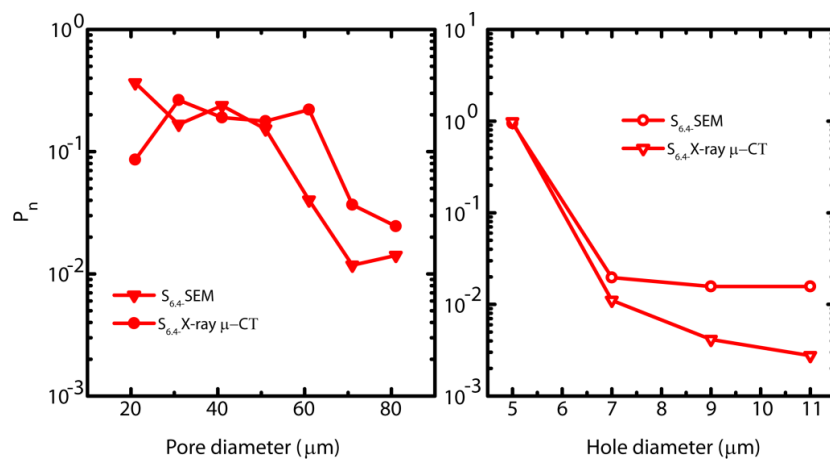
Scaffolds	Flow rate (ml/min)	<b>Pe<sub>1</sub></b>			<b>Pe<sub>2</sub></b>		
		<b>0.25</b>	<b>0.5</b>	<b>1</b>	<b>0.25</b>	<b>0.5</b>	<b>1</b>
S <sub>0</sub>		23.8	14.2	27.6	447.9	336.4	132.5
S <sub>1.6</sub>		32.9	16.7	29.0	313.3	203.0	116.2
S <sub>3.2</sub>		31.8	8.4	16.1	442.0	890.4	197.4
S <sub>6.4</sub>		61.5	9.4	10.2	282.9	508.8	241.9



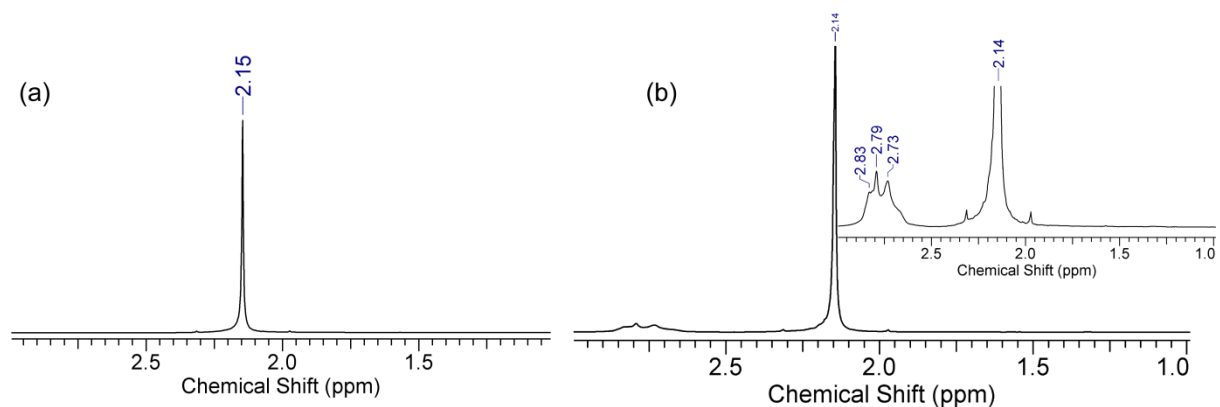
**Fig. S1:** SEM images of S<sub>1.6</sub> (a, a'); S<sub>3.2</sub> (b, b'); and S<sub>6.4</sub> (c, c')



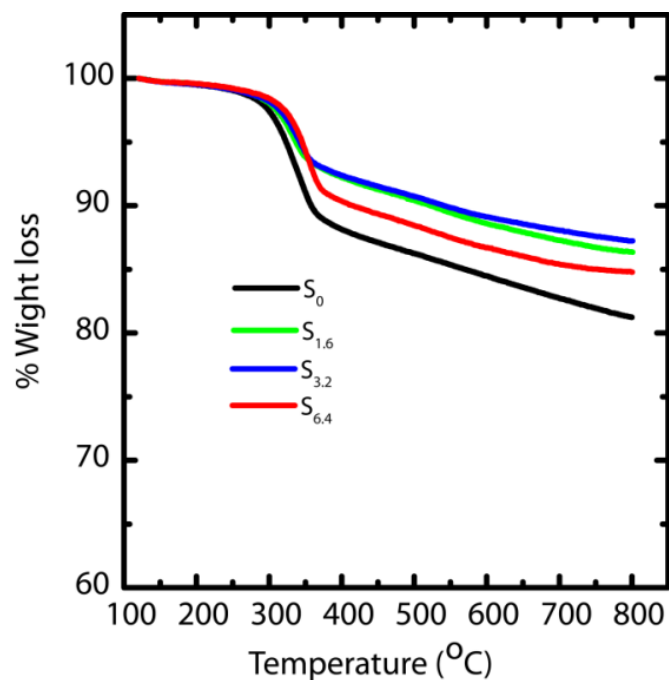
**Fig. S2:** Comparison of X-ray  $\mu$ -CT result and SEM analysis of  $S_0$ . We obtain the distribution of pore volume directly from the software that is supplied with the X-ray  $\mu$ -CT instrument. We obtain the number fraction of pores from SEM and convert it to a pore volume distribution by scaling the number fraction using  $d^3$ , where  $d$  is the pore diameter.



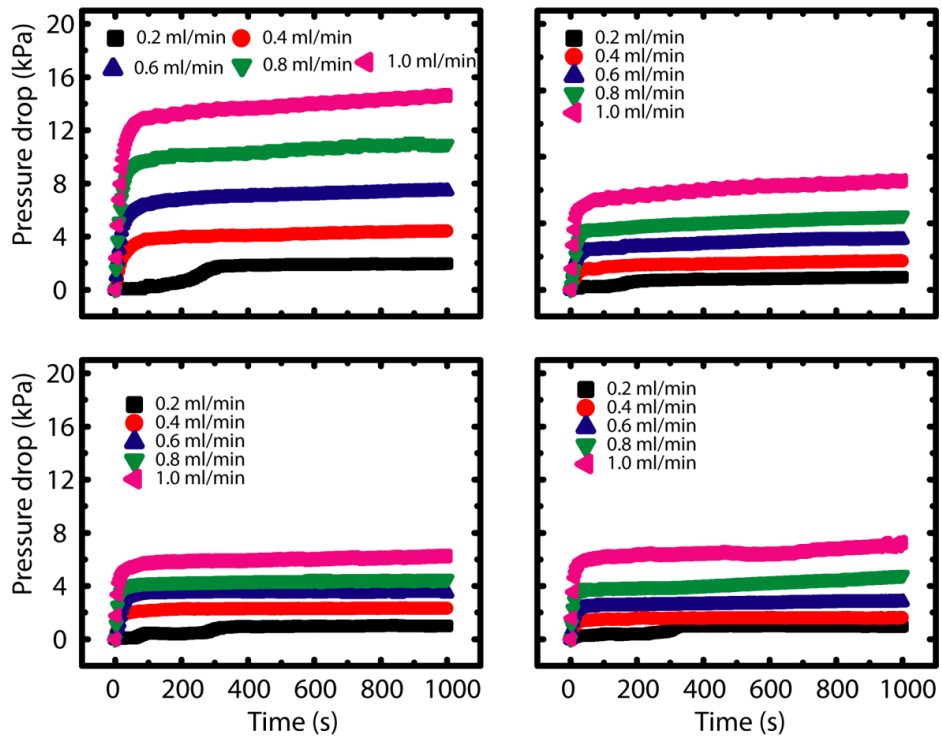
**Fig. S3:** Comparison of X-ray  $\mu$ -CT result and SEM analysis of  $S_{6.4}$ .  $P_n$  represents the distribution of pore sizes based on number fraction.



**Fig. S4:** Room temperature <sup>1</sup>H NMR spectra of (a) Water/6.4 % ACN and (b) Water/6.4 % ACN/1% PEI mixtures. In (a) a sharp peak at  $\delta=2.15$  ppm corresponds to methyl protons of ACN can be seen. In (b) a similar sharp peak at  $\delta=2.14$  ppm of the methyl proton is observed. Inset is a magnified version of (b) demonstrating the peaks corresponding to PEI at  $\delta=2.83$ ; 2.79; and 2.73 ppm.



**Fig. S5:** TGA of the scaffolds under N<sub>2</sub> atmosphere.



**Fig. S6:** Pressure drop measurement at different flow rates with time.