Electronic supplementary information (ESI)

One-step Sol-gel Synthesis of Hierarchically Porous, Flow-through Carbon/Silica Monoliths

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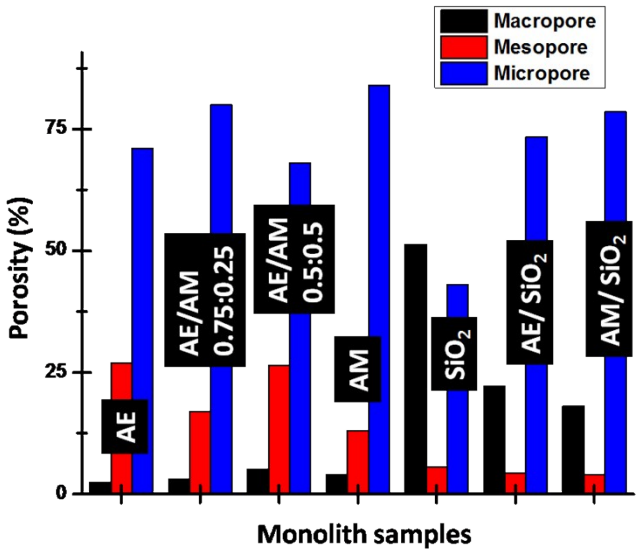

Figure S1. Histogram shows the porosity distribution of the synthesized composite monoliths.

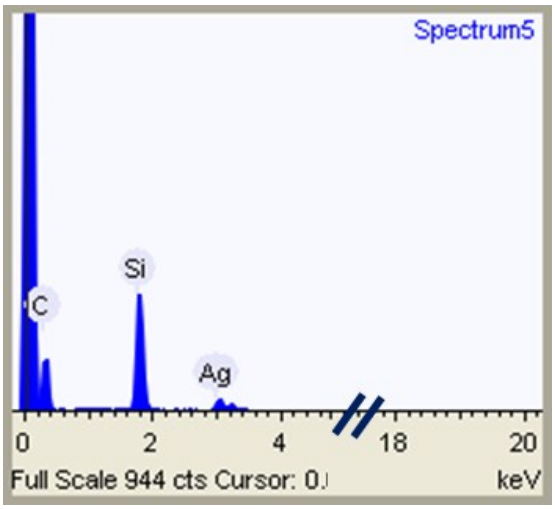

Figure S2. EDX analysis confirms the presence of silver and carbon in the porous monolith.

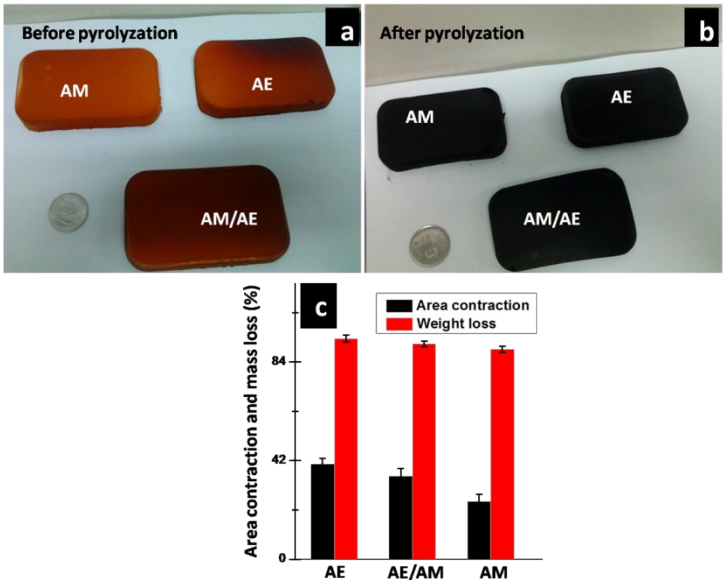

Figure S3. (a) RF polymer silica composite monoliths, (b) after carbonization at 900 ^{o}C in N_2 atmosphere, and (c) Weight loss and area contraction of the composites during pyrolysis of RF/silica composites.

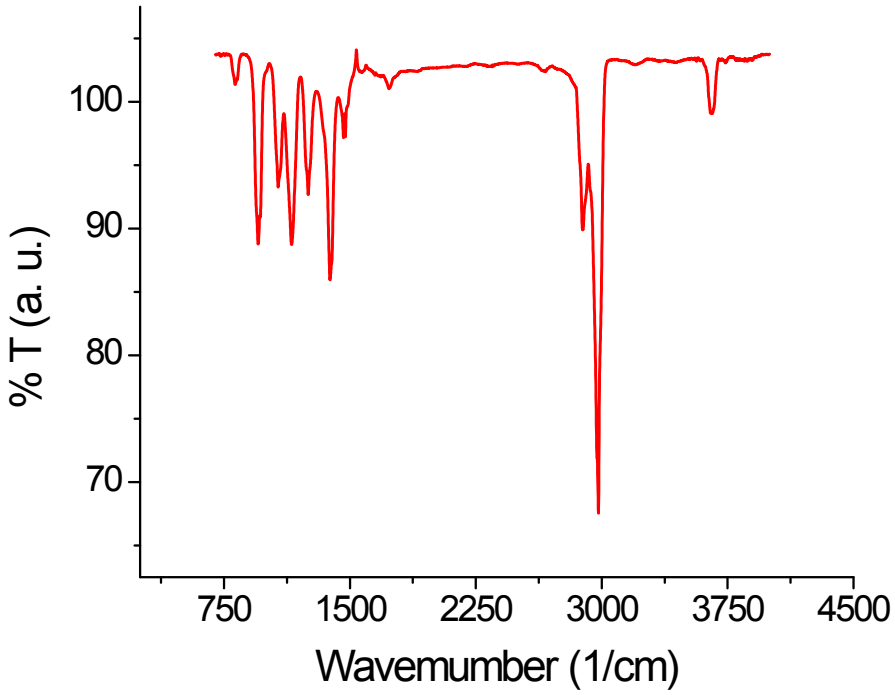

Figure S4. FTIR spectrum recorded on a carbon monolith surface.

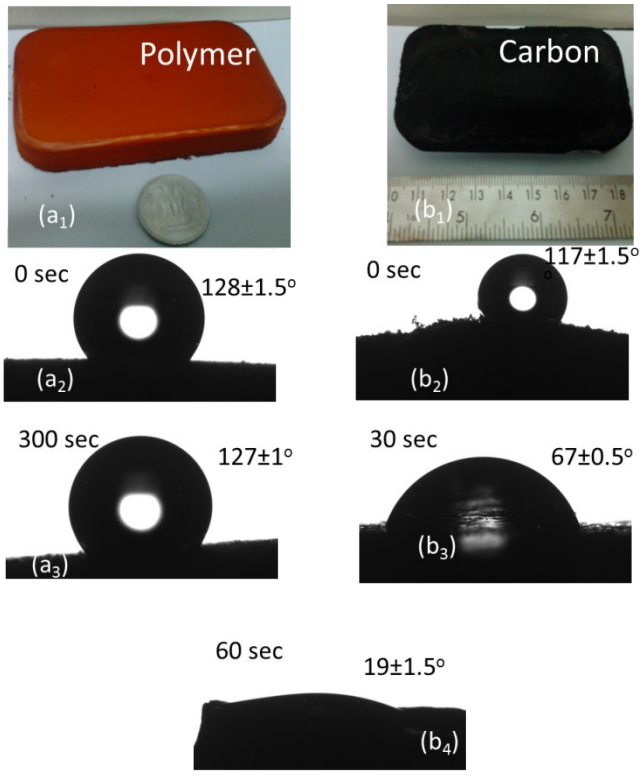

Figure S5. (a) Water contact angles on: RF/SiO_2 monolith (a_1) at initial time (a_2) and after 10 min (a_3). RF/SiO_2 derived carbon carbon monolith (b_1) at initial time (b_2), after 30 s (b_3) and I min (b_4).

Figure S6. (a) A digital micrograph shows the device components used for measuring the water permeability through carbon monolithic frit, (b) The device after assembling the parts. Inset shows a frit made of carbon monolith through which water flows.

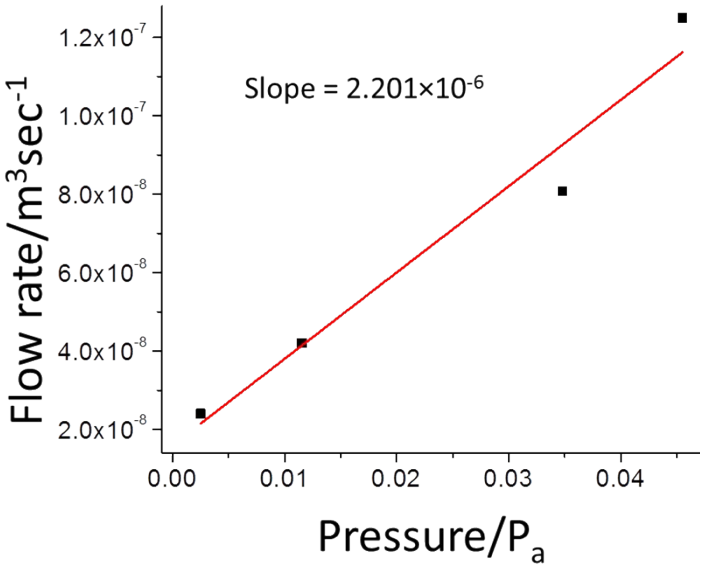

Figure S7. Permeability determinations for the carbon monolith: Slope of curve gives the permeability of the carbon monolithic frit.

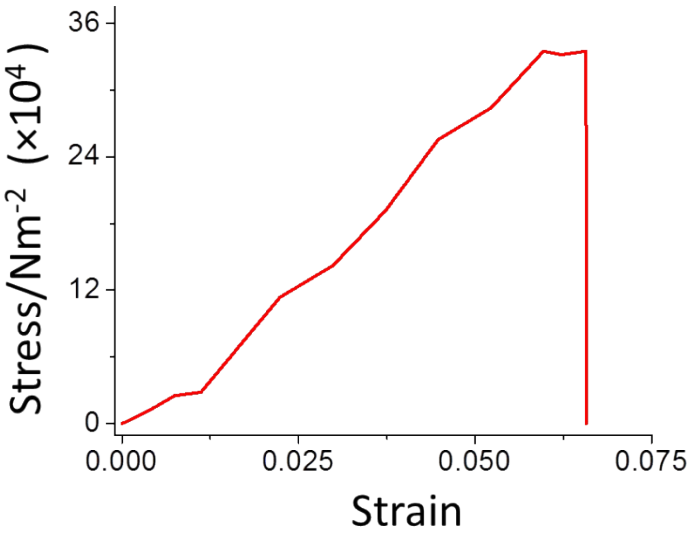

Figure S8. Stress vs. strain plot for measuring mechanical strength of the carbon monoliths: Slope of the graph gives the Young's modules of the monolith.

Table T1: Area EDX quantitative result confirms the elemental composition of Ag/carbon monolith.

Element	Weight%	Weight % S.D	Atomic %
Carbon	62.250	0.660	80.817
Silicon	33.426	0.564	18.558
Silver	4.324	0.484	0.625

Table T2: Mechanical strength of monoliths

Materials	Young Modulus (MPa)
Carbon monoliths	0.42 ± 0.04
RF/SiO_2 polymer monoliths	0.0942 ± 0.01
Silica monoliths	0.0011 ± 0.0004

Table T3. Rate constants with different silver catalyst loadings in the carbon support for 4-NP to 4-AP conversion.

Ag/carbon catalyst loading (mg)	25	50	100
Amount of silver NPs (mg)	3.012	6.02	12.04
Rate constant (K_t) (min^{-1})	0.053	0.137	0.295