

Sulfonated polypyrrole nanospheres as a solid acid catalyst

Xiaoning Tian^a, Jianqiang Yu,^b Fabing Su^b and X. S. Zhao^{*a}

^aDepartment of Chemical and Biomolecular Engineering, National University of Singapore, 4 Engineering Drive 4, Singapore 117576
E-mail: chezxs@nus.edu.sg; Fax: +65-67791936;
Tel: +65-65164727

^b Institute of Multifunctional Materials (IMM), Growing Base for State Key Laboratory of New Fiber Materials and Modern Textile, Qingdao University, P R China

^c Applied Catalysis, Institute of Chemical and Engineering Sciences, 1Pesek Road, Jurong Island, Singapore 627833

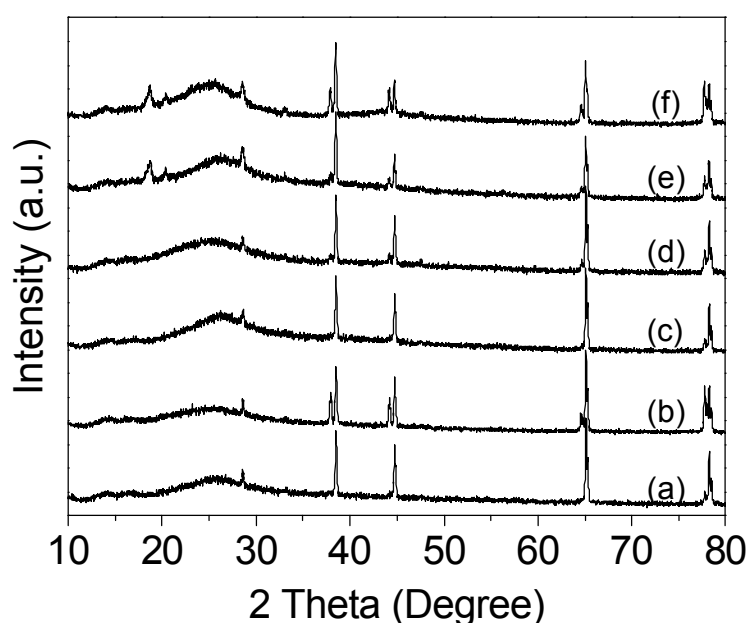


Fig. S1. XRD patterns of (a) PNs, (b) SPNs(40), (c) SPNs(150), (d) SCPNs(400,40), (e) SCPNs(400,150), and (f) SCPNs(900, 150).

Table S1. Surface compositions according to XPS analysis and surface areas of samples

Sample	C (wt %)	N (wt %)	O (wt %)	S (wt %)	Surface area (m ² /g)
PNs	83.4	7.1	9.5	0	12.4
SPNs(40)	81.0	3.2	13.9	1.9	9.5
SPNs(40) after the 4 th run	81.3	4.2	13.0	1.6	16.9
SPNs 55	73.0	7.3	15.6	4.1	13.5
SPNs(55) after the 4 th run	81.9	4.1	12.5	1.5	13.7
SPNs(70)	72.9	8.3	14.9	3.9	13.9
SPNs(70) after the 4 th run	81.0	4.9	12.1	1.9	22.1
SPNs(150)	81.3	3.8	13.0	1.8	12.9
SPNs(150) after the 4 th run	82.7	3.9	13.1	0.3	16.9
CPNs(400)	80.1	11.0	9.0	0	20.3
SCPNs(400,40)	78.7	5.8	13.0	2.5	10.6
SCPNs(400,40) after the 4 th run	81.0	6.7	11.4	0.9	18.0
SCPNs(400,150)	78.4	6.8	14.0	0.9	27.6
SCPNs(400,150) after the 4 th run	81.4	5.4	13.2	0.1	20.9
CPNs(900)	89.7	3.2	7.1	0	25.4
SCPNs(900,150)	86.9	4.0	8.2	0.9	22.4

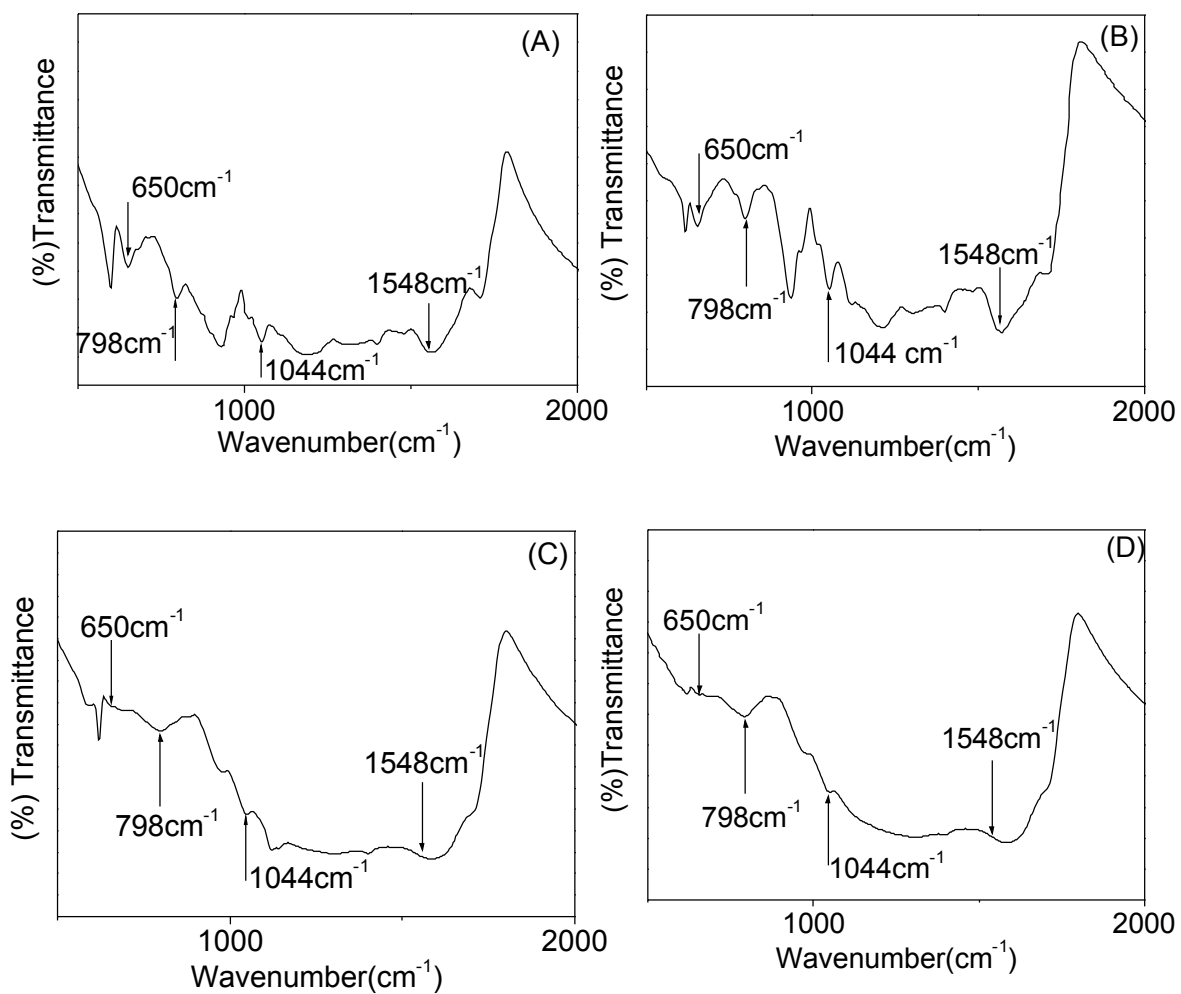


Fig. S2. FTIR spectra of (A) SPNs(40), (B) SPNs(40) after the 4th reaction run, (C) SPNs(400,40), and (D) SPNs(400,40) after the 4th reaction run.

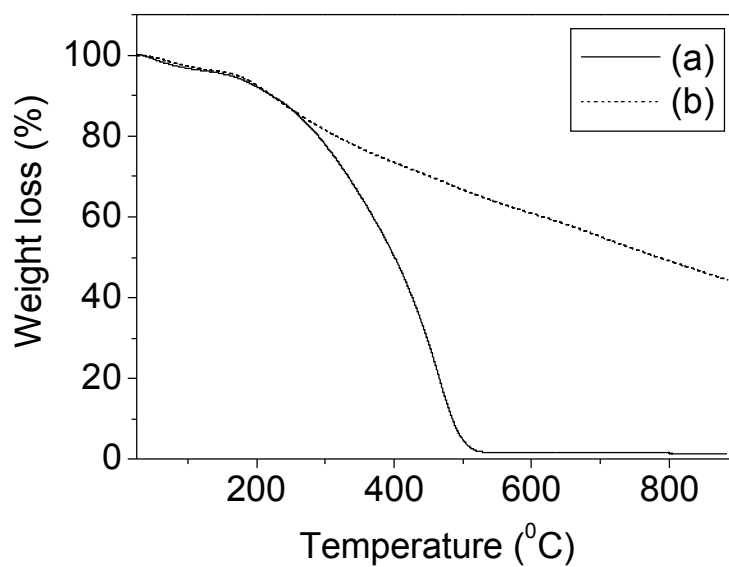


Fig. S3. TG curves of PNs in air (a) and nitrogen (b).