## Anionic and cationic copolymerized ionic liquid-grafted silica as multifunctional stationary phase for reversed-phase chromatography

Hongdeng Qiu,<sup>\*<sup>a</sup></sup> Mingliang Zhang,<sup>a</sup> Jia Chen,<sup>a</sup> Tongnian Gu,<sup>a</sup> Makoto Takafuji<sup>b</sup> and Hirotaka Ihara<sup>\*<sup>b,c</sup></sup>

<sup>a</sup> Key Laboratory of Chemistry of Northwestern Plant Resources and Key Laboratory for Natural Medicine of Gansu Province, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lanzhou 730000, China. E-mail: <u>hdqiu@licp.cas.cn</u>

<sup>b</sup> Department of Applied Chemistry and Biochemistry, Kumamoto University, 2-39-1 Kurokami, Kumamoto 860-8555, Japan.

<sup>c</sup> Kumamoto Institute for Photo-Electro Organics (Phoenics), Kumamoto 862-0901, Japan



**Fig. S1** Separation of (1) *p*-dinitrobenzene, (2) *m*-dinitrobenzene and (3) *o*-dinitrobenzene with (a)  $C_{18}$  and (b) Sil-P(ImC<sub>18</sub>-SS) columns. Mobile phase: 50% methanol. Other chromatographic conditions are the same as in Fig. 3.



**Fig. S2** Separation of bases and nucleosides including (1) cytosine, (2) uridine, (3) thymine, (4) purine, (5) xanthosine, (6) adenosine and (7) theophylline with (a)  $C_{18}$  and (b) Sil-P(Im $C_{18}$ -SS) columns using 200 mmol  $L^{-1}$  KH<sub>2</sub>PO<sub>4</sub> as mobile phase at 30 °C. Theophylline was eluted after 165 min in this condition for  $C_{18}$  column.



**Fig. S3** The effect of pH values of buffer on the retention of (1) naringenin, (2) baicalein, (3) apigenin, (4) kaempferol with Sil-P(ImC<sub>18</sub>-SS) column using 10 mmol  $L^{-1}$  NaH<sub>2</sub>PO<sub>4</sub>: methanol= (40/60, v/v) as mobile phase.