

Supporting Information

Radiolysis of crown ether/ionic liquid systems: identification of radiolytic products and their effect on the removal of Sr^{2+} from nitric acid

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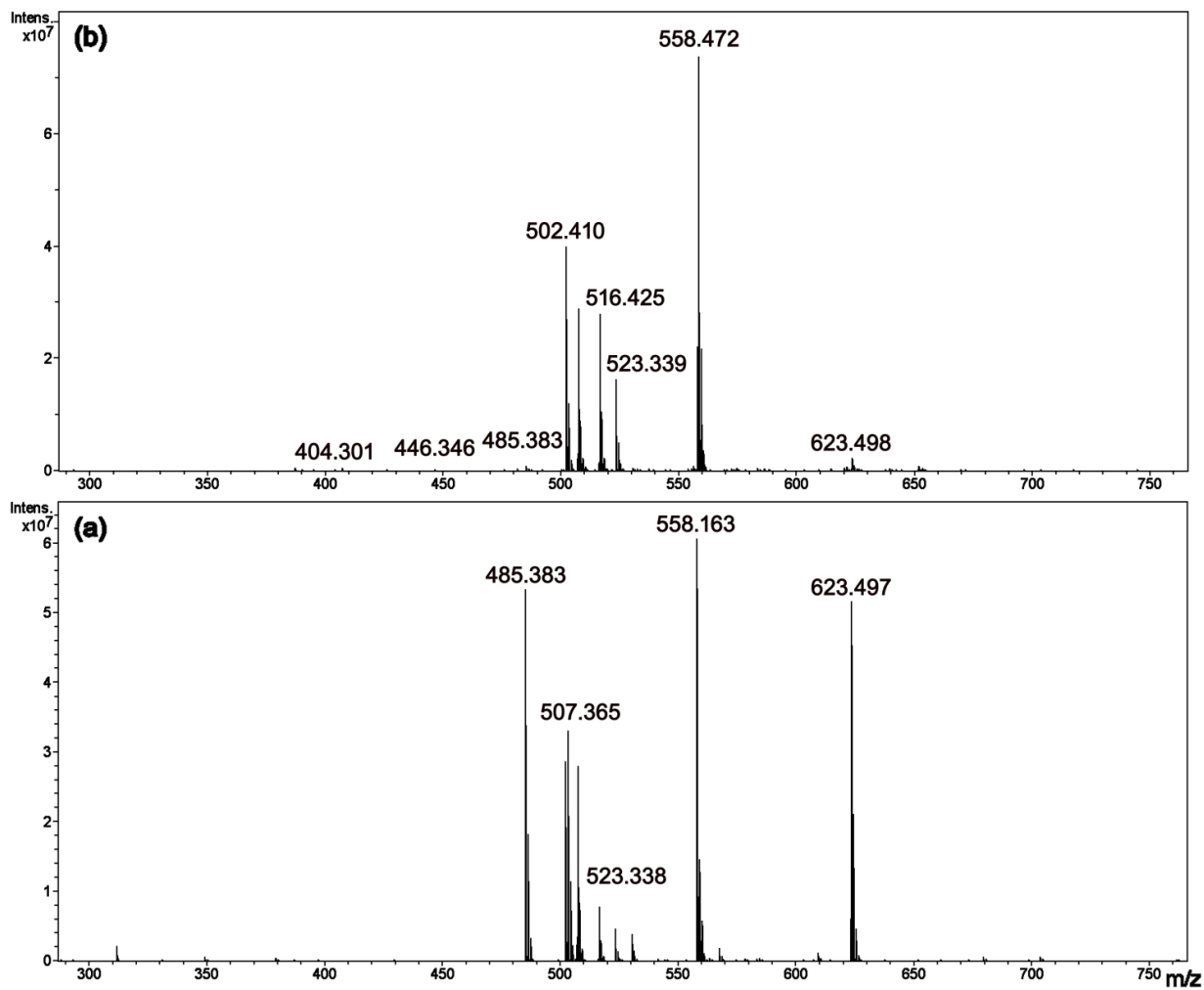


Fig.S1 High-resolution ESI-MS spectra of DtBuCH18C6/[C₄mim][NTf₂] before (a) and after irradiation at 500 kGy (b).

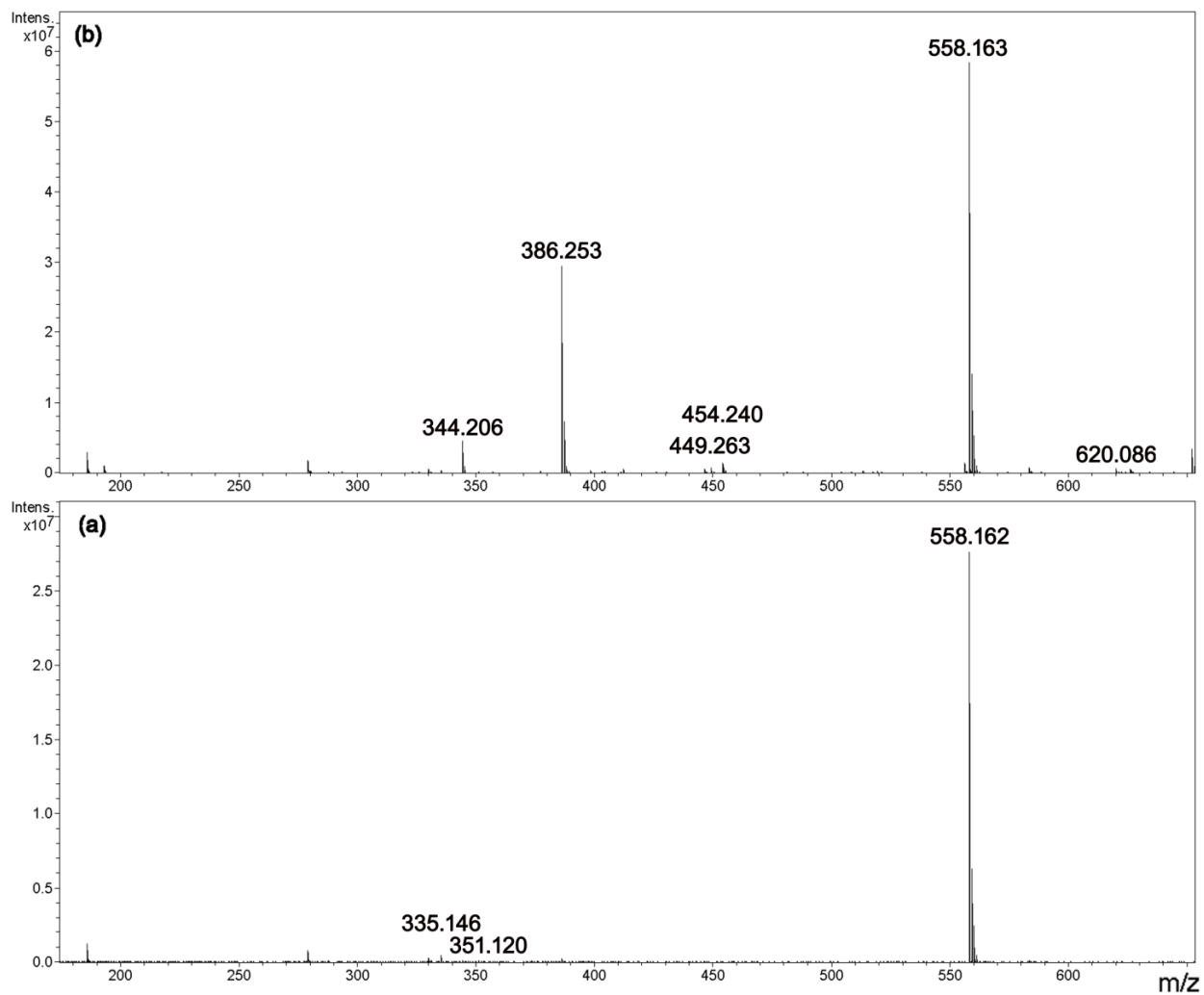


Fig.S2 High-resolution ESI-MS spectra of B18C6/[C₄mim][NTf₂] before (a) and after irradiation at 500 kGy (b).

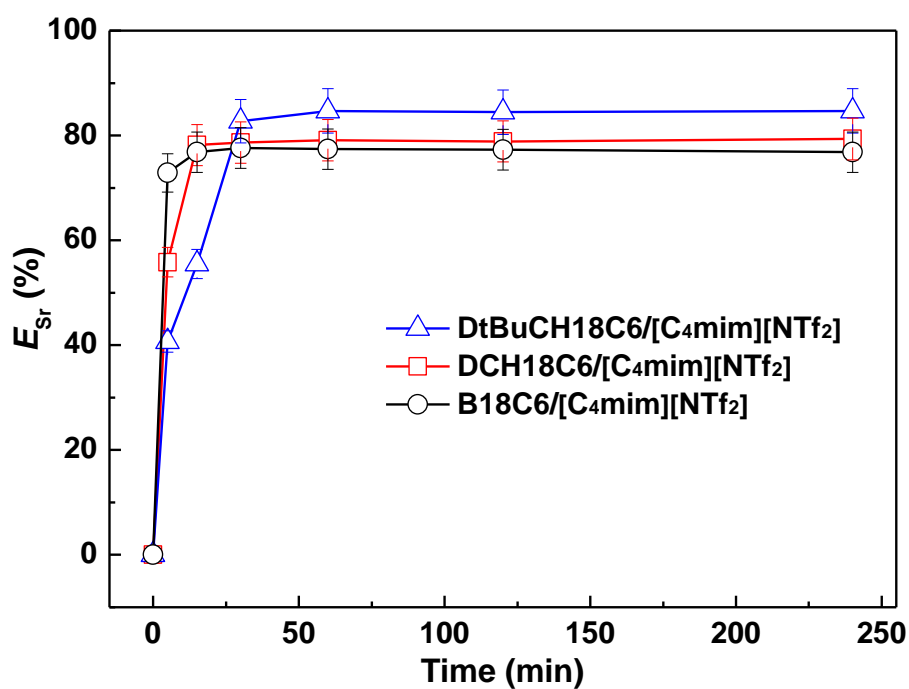


Fig.S3 Influence of equilibrium time on E_{Sr} of crown ether/[C₄mim][NTf₂] system. (DCH18C6/[C₄mim][NTf₂] (□); DtBuCH18C6/[C₄mim][NTf₂] (△); B18C6/[C₄mim][NTf₂] (O))

Table S1. D_{Sr} and E_{Sr} of crown ether/[C₄mim][NTf₂] system depending on equilibrium time. ([Crown ether]: 0.1 M; [Sr²⁺]: 0.01 M; [HNO₃]: 3 M)

Time (min)	DCH18C6/[C ₄ mim][NTf ₂]		DtBuCH18C6/[C ₄ mim][NTf ₂]		B18C6/[C ₄ mim][NTf ₂]	
	D_{Sr}	E_{Sr} (%)	D_{Sr}	E_{Sr} (%)	D_{Sr}	E_{Sr} (%)
0	0	0	0	0	0	0
5	1.26	55.8	0.68	40.7	2.65	72.9
15	3.61	78.2	1.24	55.5	3.33	76.8
30	3.69	78.7	4.80	82.7	3.46	77.6
60	3.81	79.1	5.51	84.7	3.44	77.4
120	3.77	78.9	5.41	84.4	3.44	77.3
240	3.83	79.3	5.56	84.7	3.34	76.8

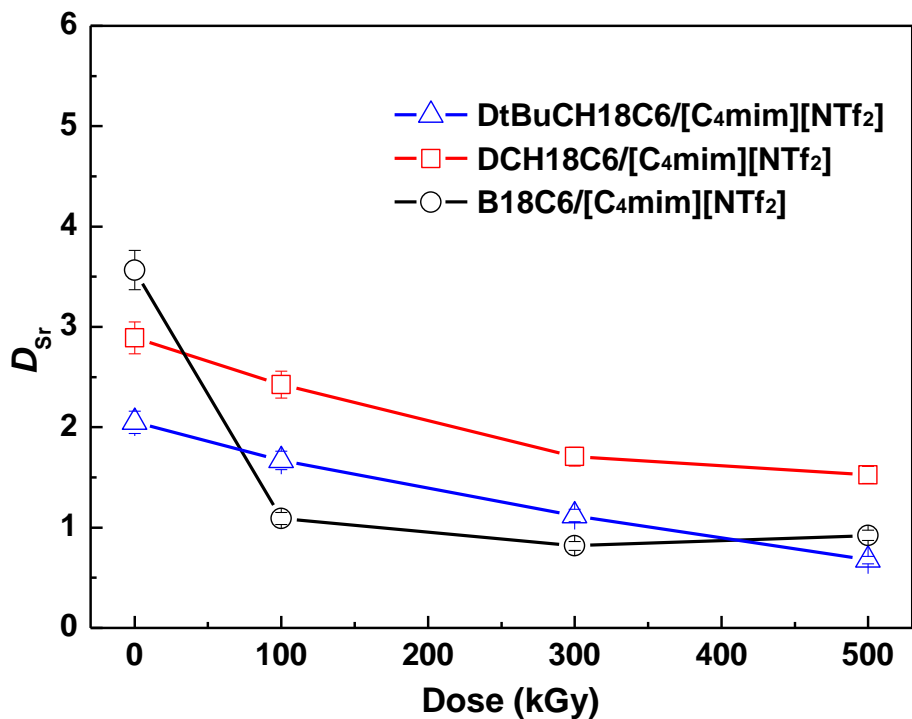


Fig.S4 Influence of dose on Sr^{2+} extraction by crown ether/[C₄mim][NTf₂] system.

([Crown ether]: 0.1 M; [Sr²⁺]: 0.05 M; [HNO₃]: 3 M)

Table S2. D_{Sr} and E_{Sr} of crown ether/[C₄mim][NTf₂] system before and after irradiation.

([Crown ether]: 0.1 M; [Sr²⁺]: 0.05 M; [HNO₃]: 3 M)

Dose (kGy)	DCH18C6/[C ₄ mim][NTf ₂]		DtBuCH18C6/[C ₄ mim][NTf ₂]		B18C6/[C ₄ mim][NTf ₂]	
	D_{Sr}	E_{Sr} (%)	D_{Sr}	E_{Sr} (%)	D_{Sr}	E_{Sr} (%)
0	2.89	74.1	2.05	67.0	3.57	78.0
100	2.42	70.8	1.67	62.2	1.09	52.5
300	1.71	63.3	1.12	52.4	0.82	45.3
500	1.52	60.3	0.68	40.0	0.90	48.0