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Supporting Information

Extraction mechanism and γ-radiation effect on the removal of Eu^{3+} by a novel BTPhen/[$C_n$mim][NTf_2] system in the presence of nitric acid

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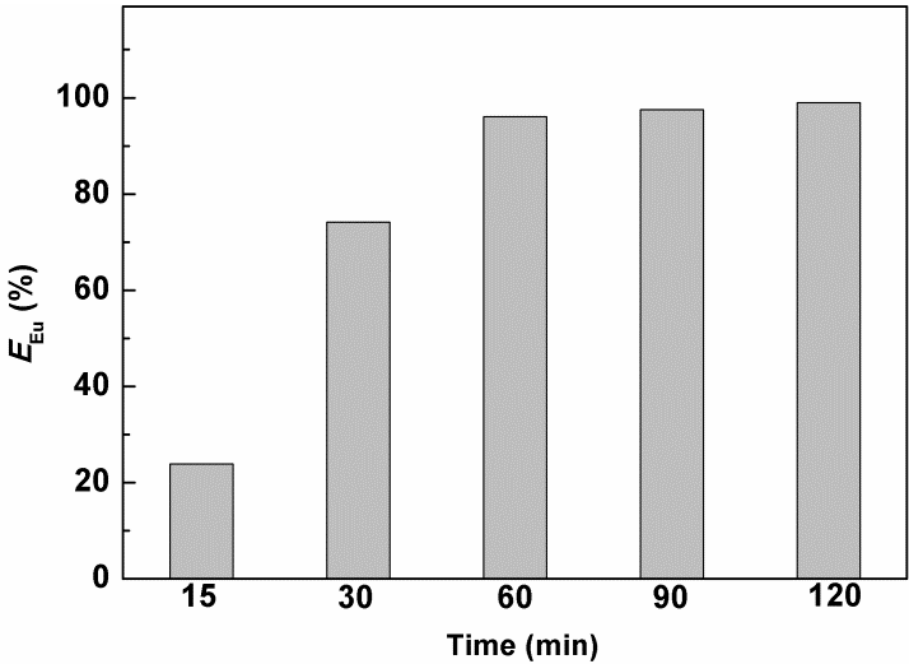

Fig. S1 Influence of the oscillation time on E_{Eu} in BTPhen/[C_2mim][NTf_2] system. Initial nitric acid concentration: 0.1 M.

Table S1. D_{Eu} in BTPhen/[$C_n$mim][NTf_2] systems depending on the initial nitric acid concentration.

[HNO_3] (mol L^{-1})	**D_{Eu}**		
	[C_2mim][NTf_2]	**[C_4mim][NTf_2]**	**[C_8mim][NTf_2]**
0.01	**52**	**21**	**0.55**
0.05	**4.7**	**1.0**	**0.32**
0.1	**1.9**	**0.34**	**0.23**
0.5	**0.80**	**0.07**	**0.02**
1	**0.55**	**0.06**	**0.04**
2	**0.33**	**0.07**	**0.05**
3	**0.40**	**0.12**	**0.06**

Table S2. D_{Eu} in BTPhen/1-octanol system depending on the initial nitric acid concentration.

$[HNO_3]$ (mol L^{-1})	**D_{Eu}**
0.1	**0.56**
1	**1.66**
3	**2.56**

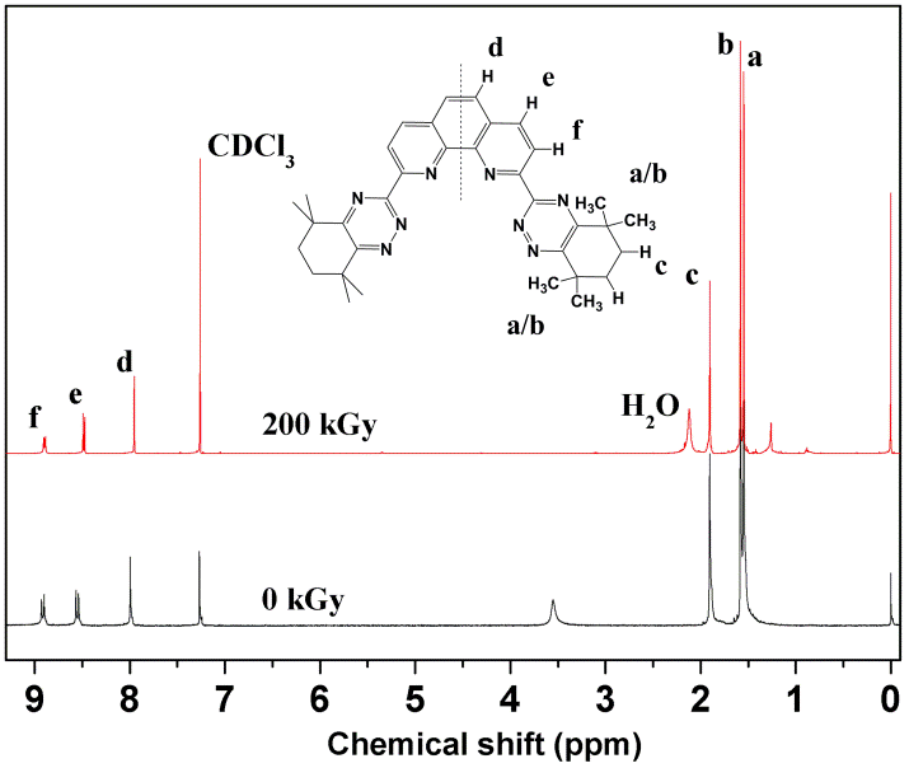

Fig. S2 ^{1}H NMR spectra of BTPhen before and after irradiation.

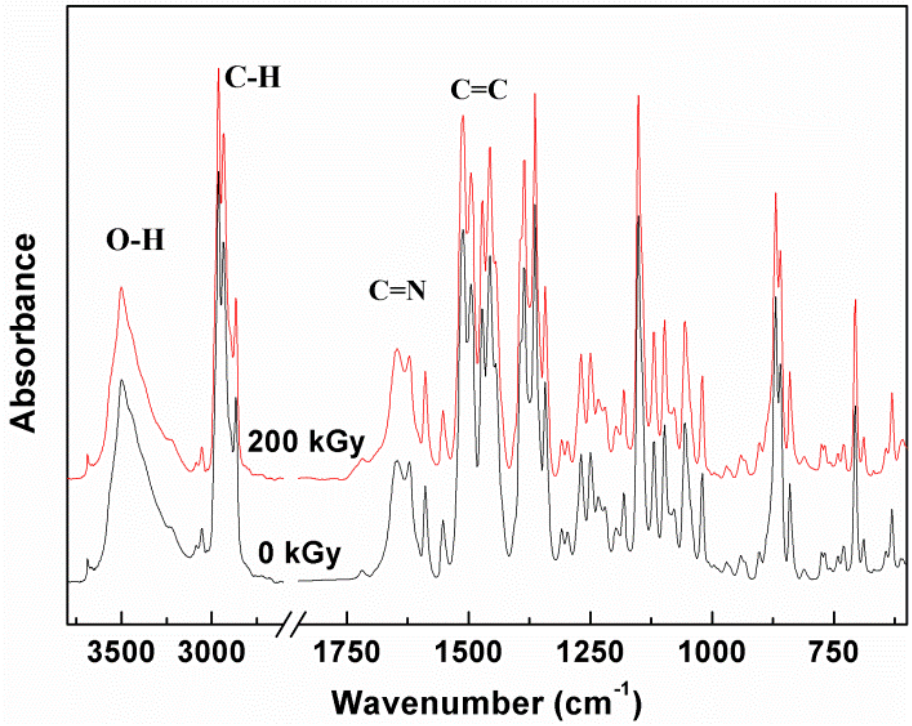

Fig. S3 Micro-FTIR spectra of BTPhen before and after irradiation.

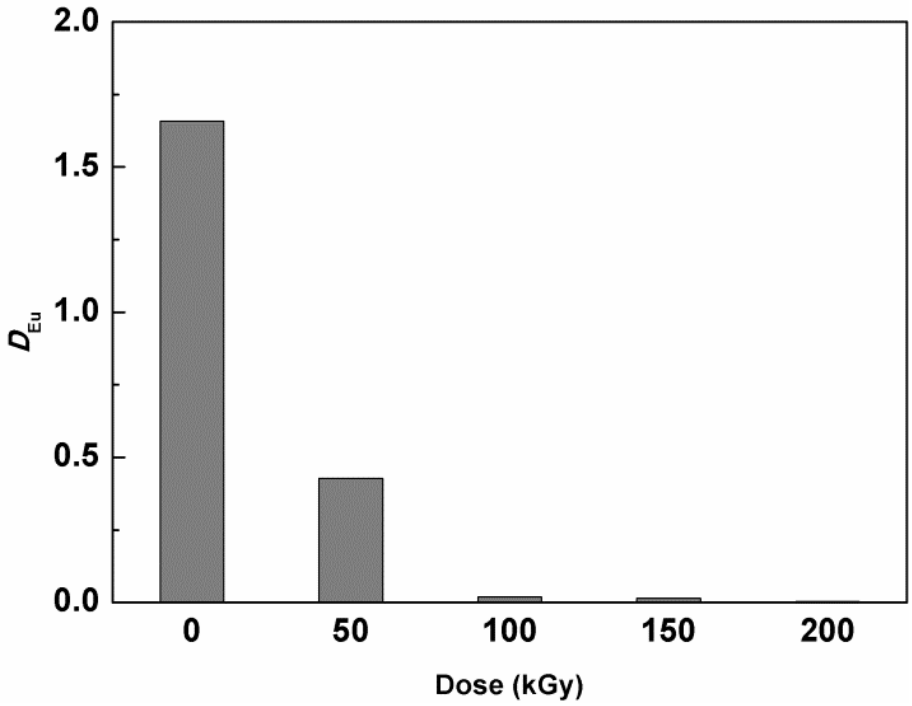

Fig. S4. Influence of γ-radiation on the D_{Eu} in BTPhen/1-octanol system. Initial nitric acid concentration: 1 M.

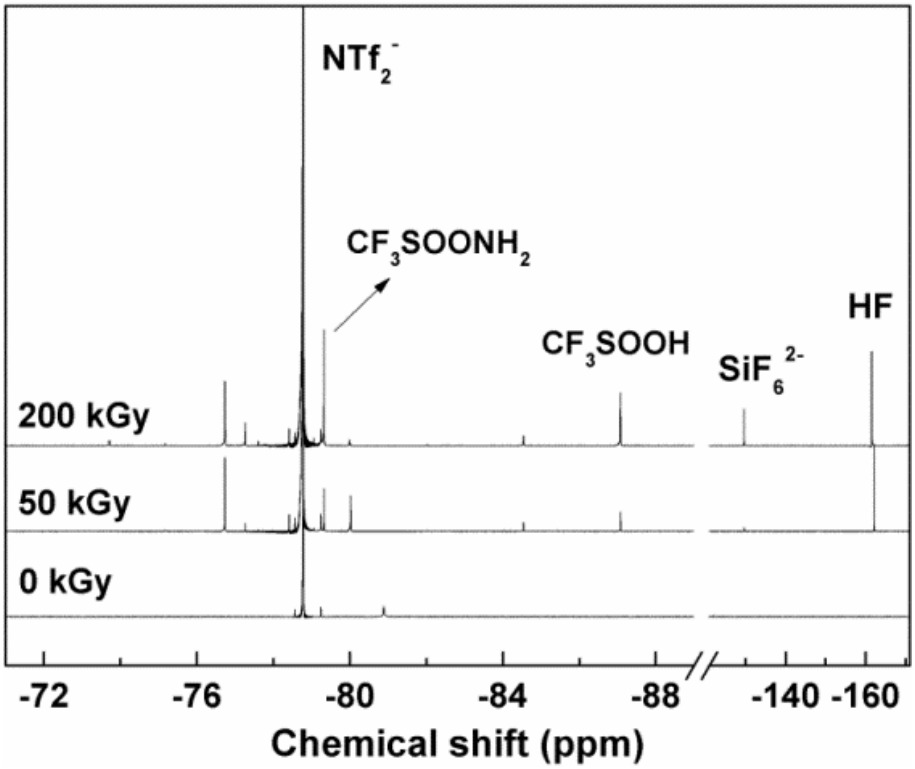

Fig. S5 ^{19}F NMR spectra of $[C_2mim][NTf_2]$ before and after irradiation.

Table S4. Core level binding energy for sediment, $Eu_2(SO_3)_3$ and EuF_3

Core level	Binding energy (eV)		
	Sediment	**$Eu_2(SO_3)_3$**	**EuF_3**
O 1s	**531.69**	**531.24**	**–**
F 1s	**684.67**	**–**	**684.19**
S 2p	**168.85**	**167.33**	**–**
Eu 4d	**136.90**	**136.62**	**136.57**