

**Electronic Supplementary Information for**

**A Novel Heterobimetallic Ru(II)-Gd(III) Complex Based Magnetoluminescent Agent for MR and Luminescence Imaging**

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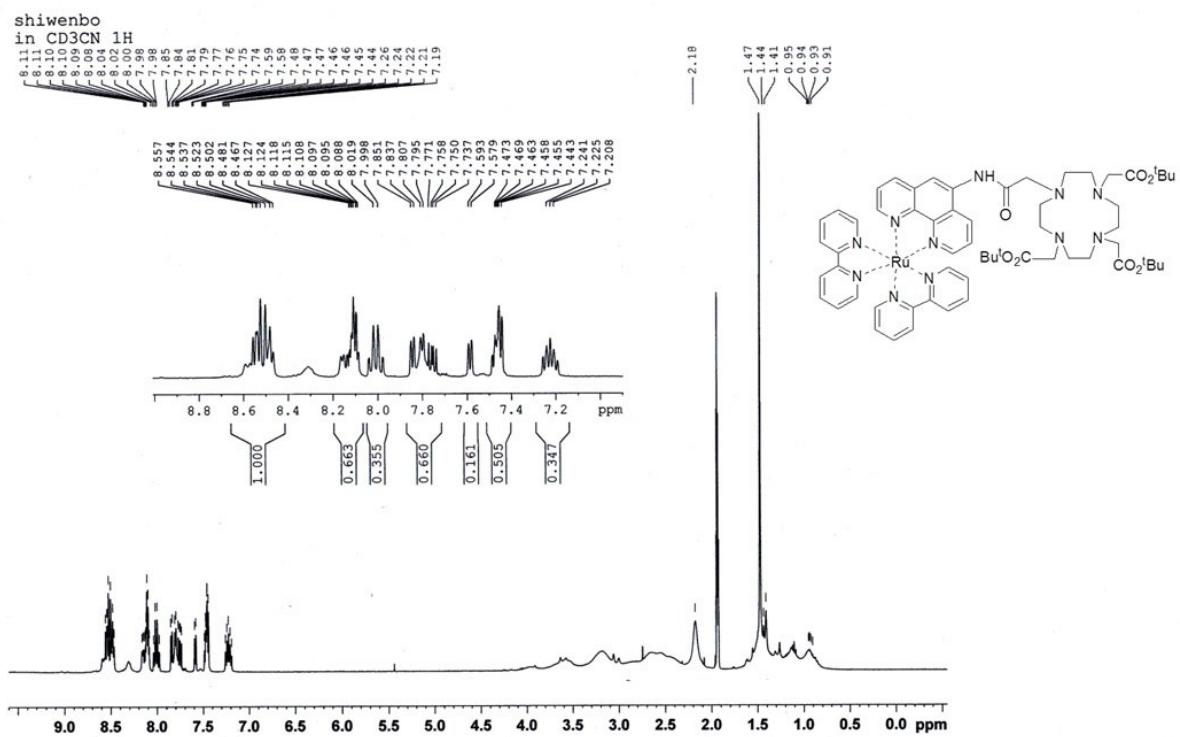
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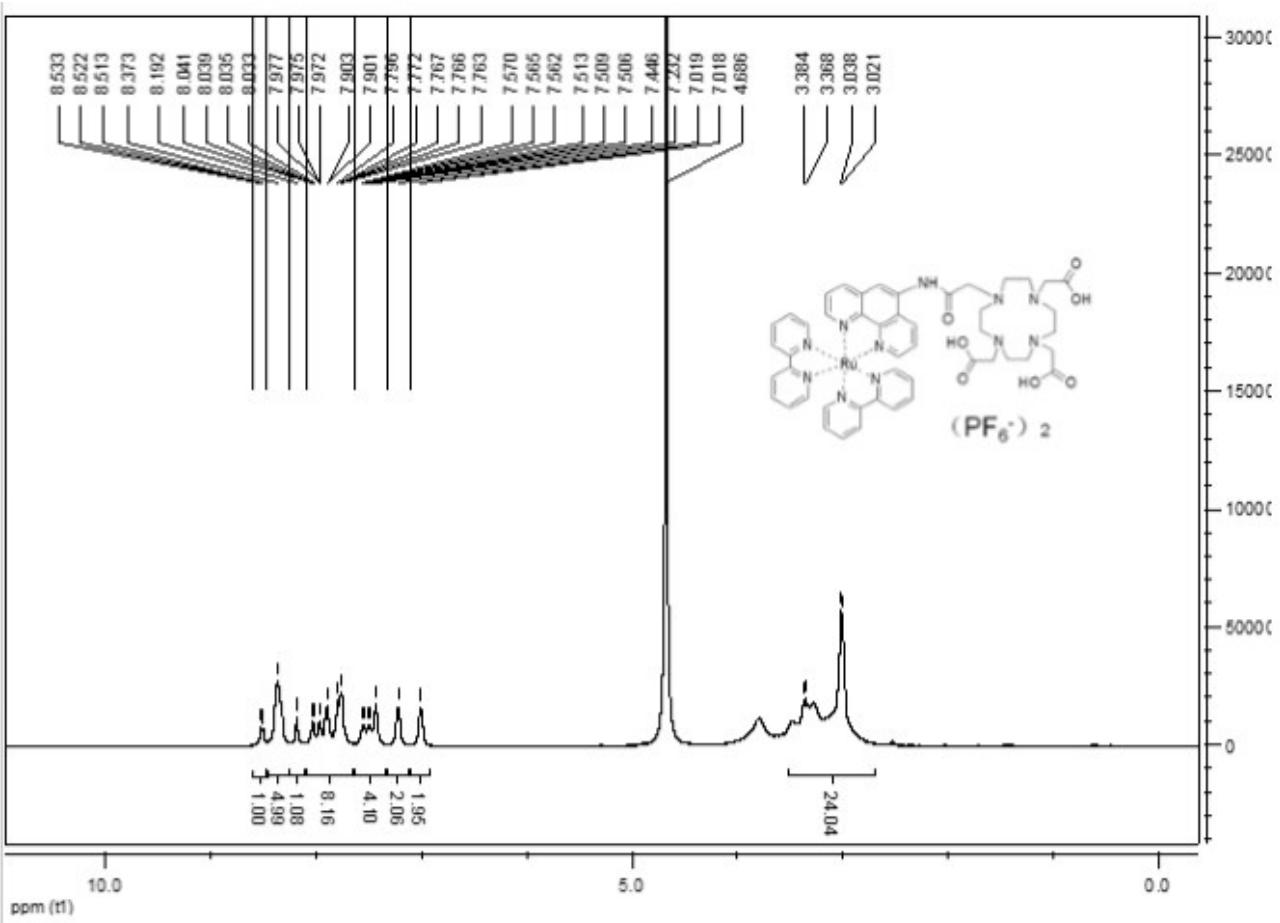
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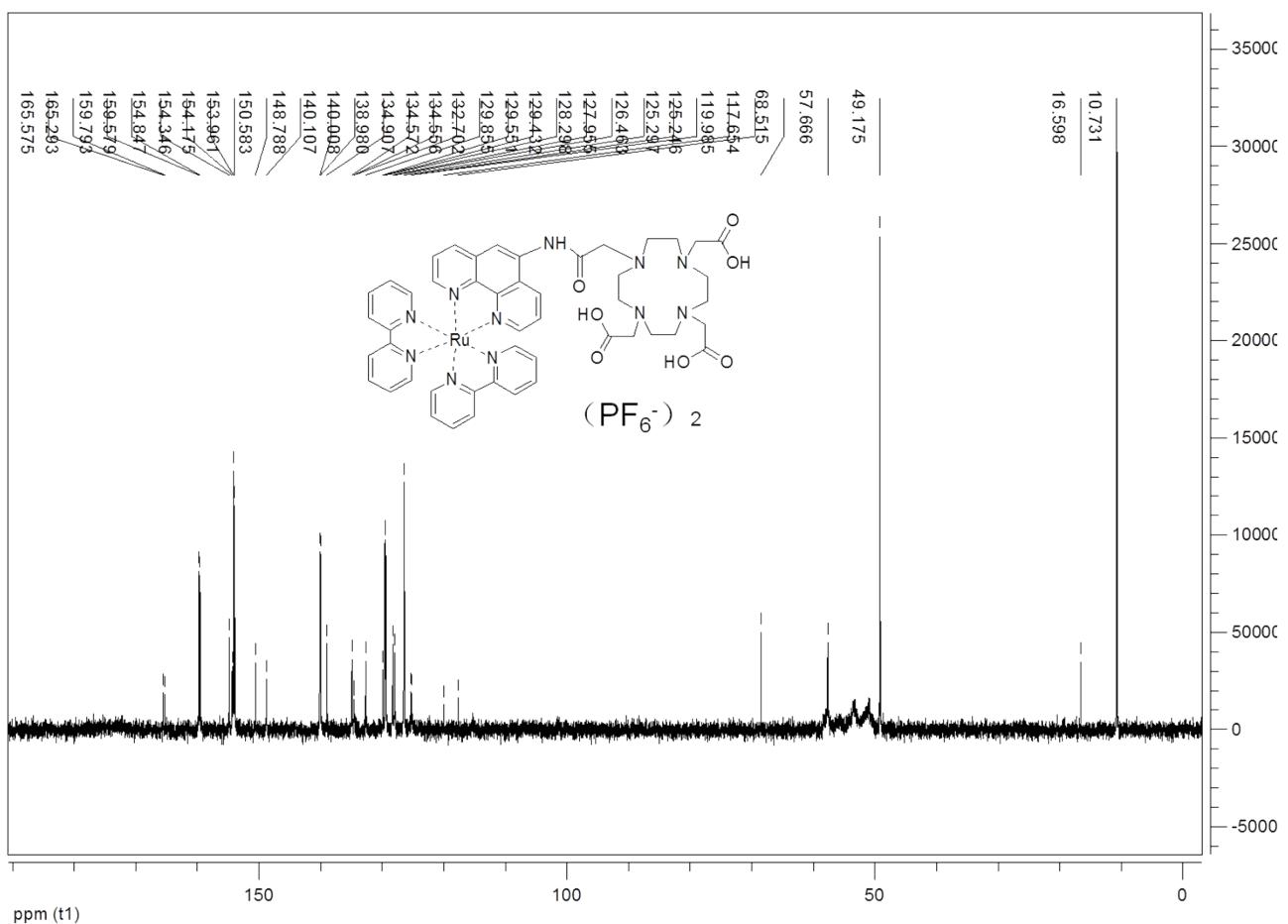
E-mail: yezq@dlut.edu.cn



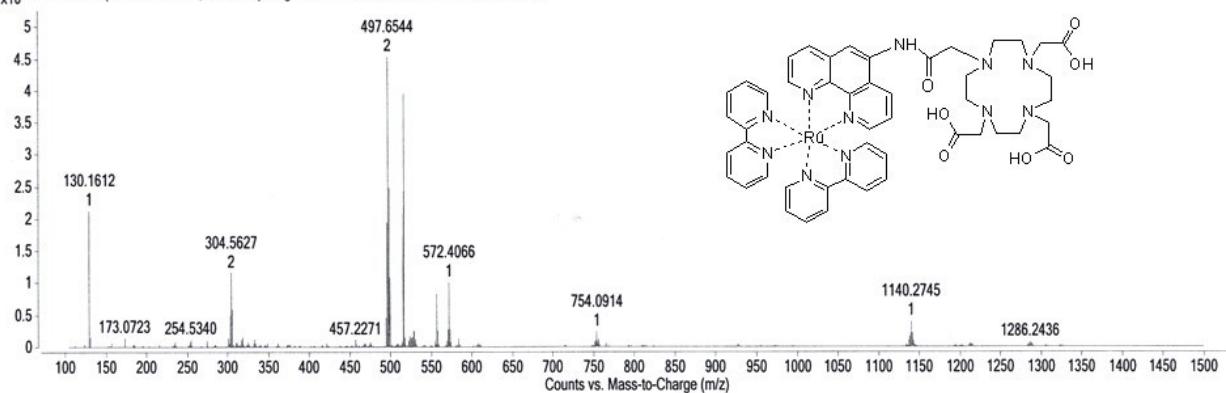
**Fig. S1.**  $^1\text{H}$  NMR of complex 1



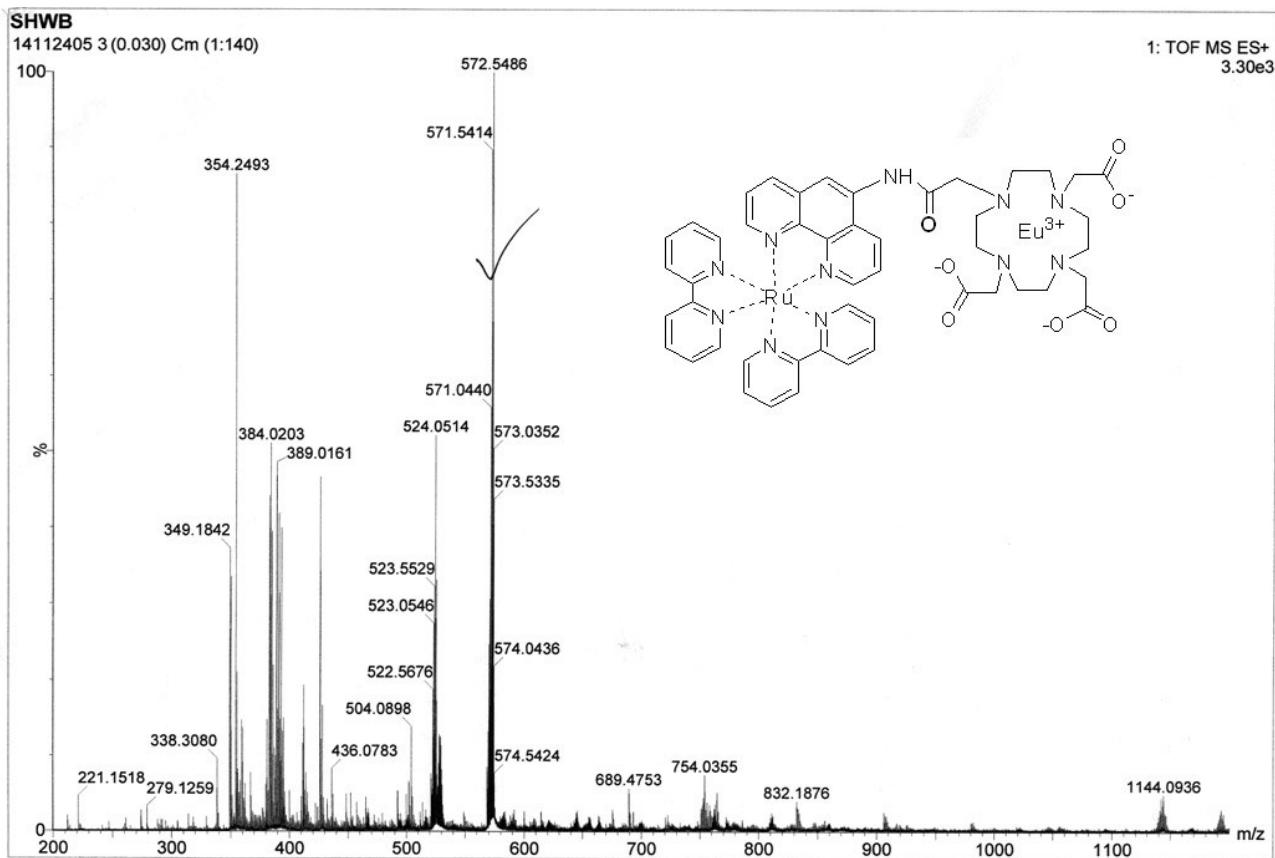
**Fig. S2.**  $^1\text{H}$  NMR of complex 2.



x10<sup>5</sup> +ESI Scan (2.500-3.050 min, 34 Scans) Frag=200.0V 20141119-6-SHIWENBO.d Subtract

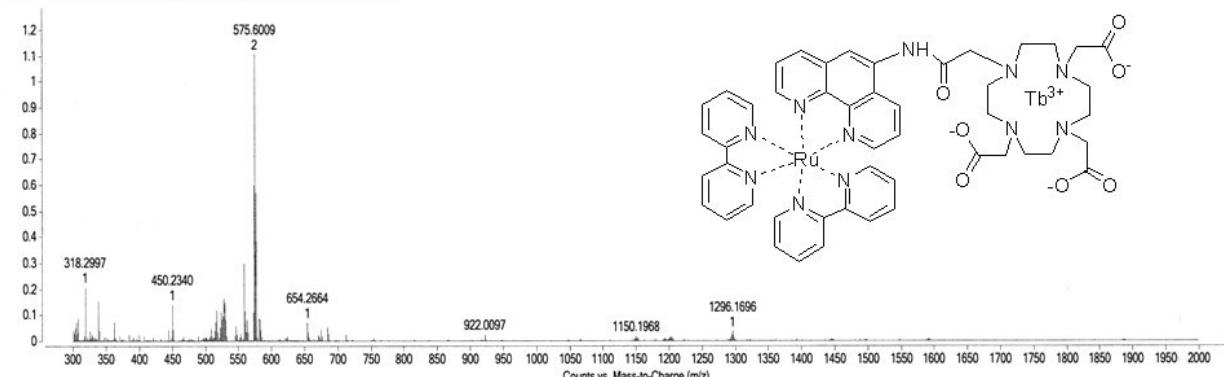


**Fig. S4.** ESI-MS spectrum of complex 2

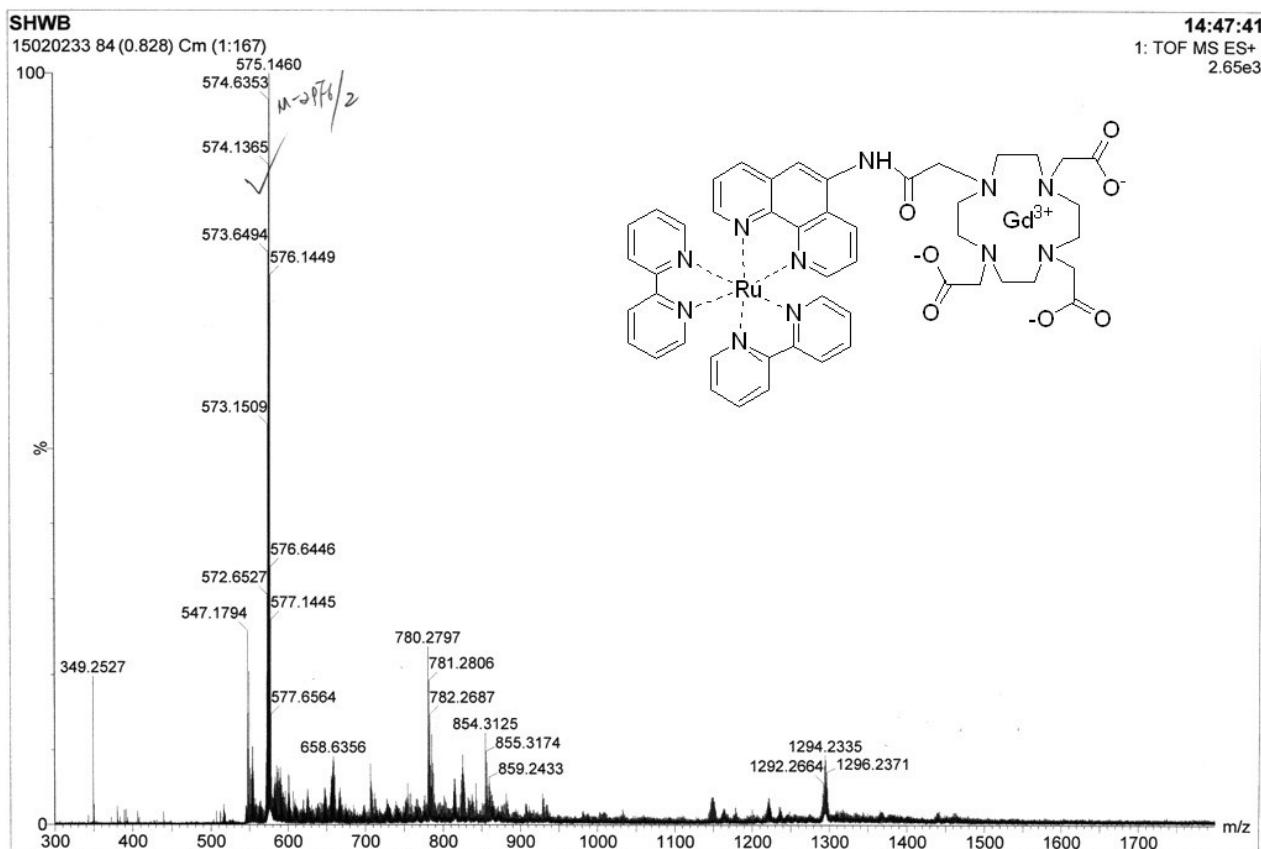


**Fig. S5** ESI-MS spectrum of Ru-Eu

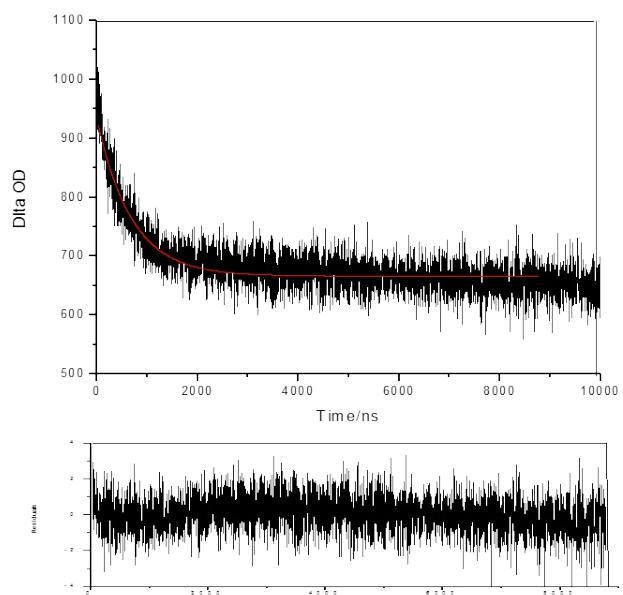
x10<sup>5</sup> +ESI Scan (1.534-1.784 min, 15 Scans) Frag=200.0V 20141106-SHIWENBO.d



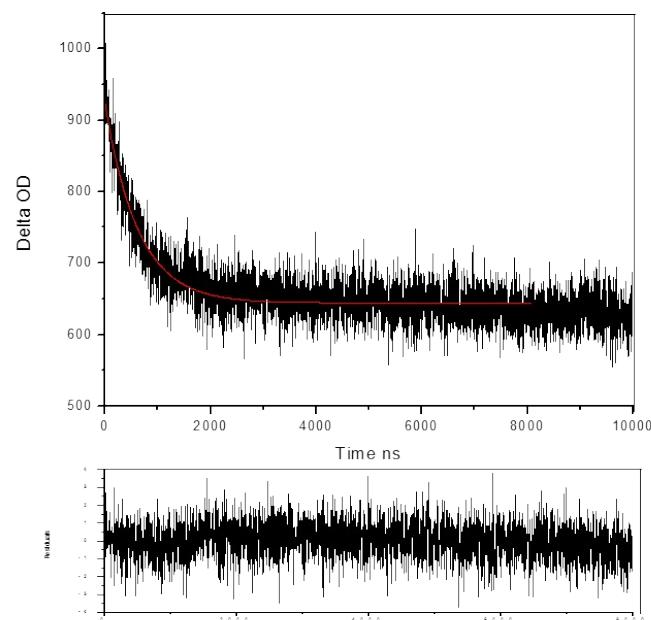
**Fig. S6.** ESI-MS spectrum of Ru-Tb



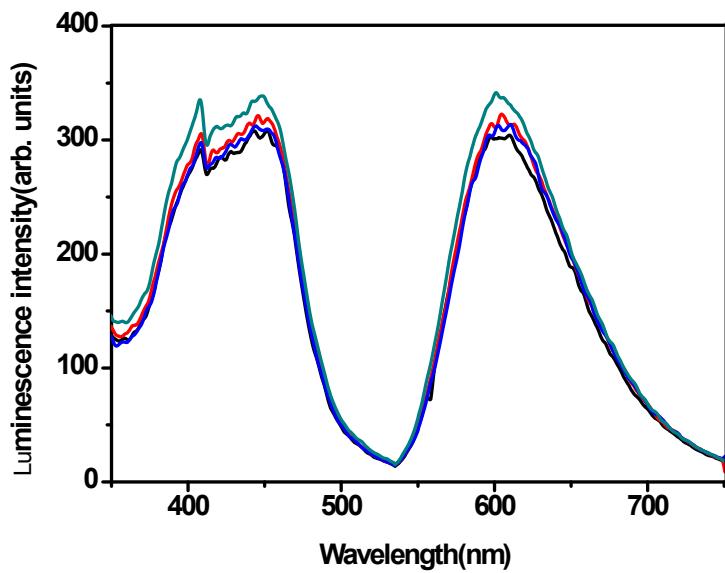
**Fig. S7** ESI-MS spectrum of **Ru-Gd**



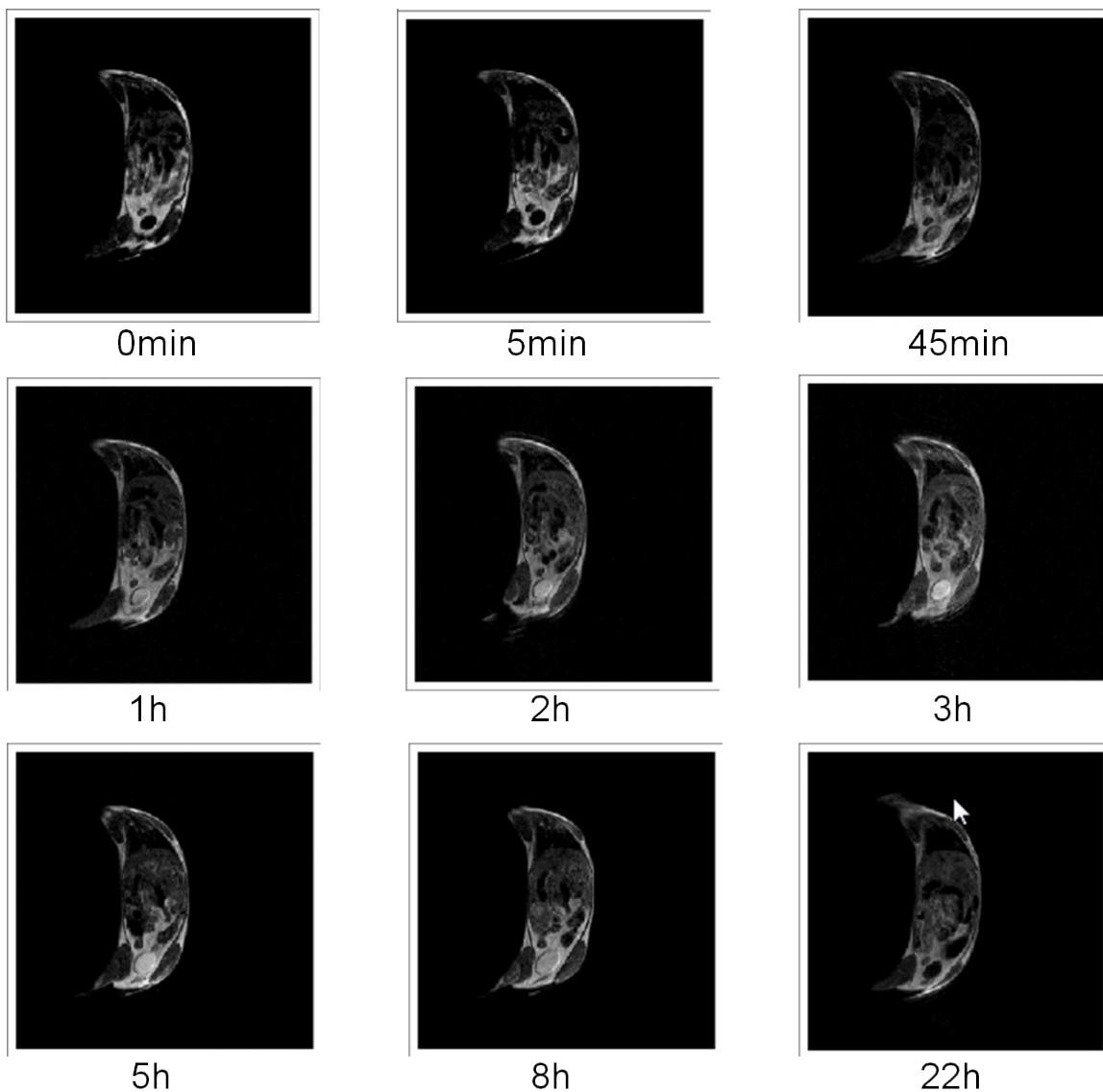
**Fig. S8.** The luminescence decay trace of **Ru-Gd**.



**Fig. S9.** The luminescence decay trace of complex 2.



**Fig. S10.** Excitation and emission spectra of the heterobimetallic Ru(II)–Ln(III) complexes. **Ru-Eu** (black line); **Ru-Tb** (red line); **Ru-Gd** (blue line); complex 2 (dark cyan line).



**Fig. S11.** T<sub>1</sub>-weighted MR sagittal section images of KM mouse before and after intraperitoneal injection of **Ru-Gd**.

**Table S1.** The data of longitudinal relaxation time and rate of **Ru-Gd** in water.

Conc. of $\text{Gd}^{3+}$ (mM)	T1(s)	$1/T_1$ (s $^{-1}$ )
<b>0.026</b>	<b>2.14</b>	<b>0.47</b>
<b>0.05</b>	<b>1.73</b>	<b>0.58</b>
<b>0.10</b>	<b>1.13</b>	<b>0.89</b>
<b>0.15</b>	<b>0.89</b>	<b>1.13</b>
<b>0.25</b>	<b>0.64</b>	<b>1.57</b>
<b>0.36</b>	<b>0.49</b>	<b>2.05</b>

**Table S2.** The data of transverse relaxation time and rate of **Ru-Gd** in water.

Conc. of Gd <sup>3+</sup> (mM)	T2(s)	1/T2 (S <sup>-1</sup> )
<b>0.025</b>	<b>1.97</b>	<b>0.51</b>
<b>0.05</b>	<b>1.49</b>	<b>0.67</b>
<b>0.10</b>	<b>0.99</b>	<b>1.01</b>
<b>0.15</b>	<b>0.77</b>	<b>1.29</b>
<b>0.25</b>	<b>0.54</b>	<b>1.85</b>
<b>0.36</b>	<b>0.41</b>	<b>2.42</b>