

## Electronic Supplementary Information

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### **Preparation of REE-doped NaY(WO<sub>4</sub>)<sub>2</sub> single crystals for quantitative determination of rare earth elements in REE:NaY(WO<sub>4</sub>)<sub>2</sub> laser crystals by LA-ICP-MS**

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Table S1 Quantitative statistics of elemental fractionation index after internal standardization

Internal standard	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
<sup>89</sup> Y	1.006	1.010	1.007	1.005	1.006	1.010	1.004	1.005	1.005	1.009	1.005	1.003	1.003	1.004
<sup>180</sup> W	0.967	0.971	0.968	0.966	0.967	0.971	0.965	0.966	0.966	0.970	0.966	0.964	0.965	0.966

Table S2 Elemental fractionation index of REEs obtained under different laser ablation spot sizes

Spot size ( $\mu\text{m}$ )	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
5	1.89	2.29	2.00	1.92	1.70	1.85	1.43	1.34	1.33	1.29	1.19	1.25	1.16	1.08
10	1.13	1.20	1.13	1.09	1.09	1.15	1.05	1.01	1.04	1.02	1.01	1.03	1.03	1.00
16	1.04	1.02	0.91	1.04	1.04	1.01	1.02	0.89	1.01	0.86	1.01	0.86	1.01	0.92
24	0.87	1.03	1.03	1.04	1.03	1.04	1.02	1.02	0.96	1.01	0.93	1.01	1.01	1.01
32	1.02	1.03	1.02	0.96	0.96	1.03	0.92	1.02	1.01	1.02	1.02	1.01	0.95	1.01
44	1.02	1.04	1.02	1.01	1.01	1.02	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
60	1.01	1.01	1.01	1.00	1.01	1.01	1.00	1.01	1.01	1.01	1.01	1.00	1.00	1.00
90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01
120	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.00	1.00	1.01
160	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.01

Table S3 Elemental fractionation index of REEs obtained under different laser ablation repetition rates

Repetition rate (Hz)	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
4	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
6	1.00	1.01	1.01	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00
8	1.01	1.01	1.01	1.01	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10	1.01	1.01	1.01	1.01	1.00	1.01	1.01	1.00	1.00	1.00	1.00	1.01	1.00	1.00
12	1.00	1.00	1.00	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00