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Supplementary Materials for

2 **Rapid determination of Ba isotope compositions for barites using H₂O-extraction**

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method and MC-ICP-MS

4 **Lan-Lan Tian^a, Ying-Zeng Gong^b, Wei Wei^a, Jin-Ting Kang^a, Hui-Min Yu^{a,c},**

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Fang Huang^{*a,c}

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7 ^a CAS Key Laboratory of Crust-Mantle Materials and Environments, School of Earth

8 and Space Sciences, University of Science and Technology of China, Hefei, Anhui

9 230026, China. E-mail: fhuang@ustc.edu.cn

10 ^b Yunnan University, Kunming, Yunnan, 650500, China

11 ^c CAS Center for Excellence in Comparative Planetology, USTC, Hefei, Anhui

12 230026, China

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14 Table S1. The $\delta^{138/134}\text{Ba}$ of barite standards after filtering or extracting the top clear

15 part of the whole supernatant.

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Sample	Filtered Supernatant				Top part of Supernatant			
	$C_{ \text{Ba} }/\mu\text{g}$	$\delta^{138/134}\text{Ba}$ (‰)	2SD	n	$C_{ \text{Ba} }/\mu\text{g}$	$\delta^{138/134}\text{Ba}$ (‰)	2SD	n
NBS127	2.5	-0.22	0.00	4	2.0	-0.21	0.02	2
	136.6	-0.28	0.00	4				
Average	69.5	-0.25	0.08	8				
GBW07811	4.1	0.06	0.02	2	1.5	0.07	0.01	2
GBW07814	2.8	0.19	0.04	2	1.6	0.09	0.03	2
GBW07816	0.3	0.23	0.01	2	0.2	0.07	0.03	2
	7.6	0.02	0.04	2				
	9.3	-0.04	0.02	2				
	Average	5.7	0.07	0.28				
GBW07812	2.9	0.57	0.01	4	1.6	0.540	0.023	2
	5.2	0.51	0.02	4				
	23.5	0.32	0.04	4				
	19.3	0.42	0.01	2				
Average	12.7	0.46	0.21	14				

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19 Table S2. Measurement of $\delta^{138/134}\text{Ba}$ of GBW07812 and GBW07816 in 3 mol L⁻¹HCl
 20 and 3 mol L⁻¹ HNO₃ extraction media.

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Sample	3 mol L ⁻¹ HCl				3 mol L ⁻¹ HNO ₃			
	C _[Ba] /μg	$\delta^{138/134}\text{Ba}$ (‰)	2SD	n	C _[Ba] /μg	$\delta^{138/134}\text{Ba}$ (‰)	2SD	n
GBW07812	156.5	0.47	0.04	2	368.4	0.38	0.02	2
	194.0	0.51	0.01	2	291.8	0.33	0.00	2
Average	175.2	0.49	0.05	4	330.1	0.35	0.07	4
GBW07816	68.0	0.30	0.04	2	28.3	0.07	0.05	2
	36.1	0.31	0.03	2	88.5	0.10	0.06	4
Average	52.1	0.31	0.02	4	58.4	0.08	0.04	6

23 Table S3. Measurement of $\delta^{138/134}\text{Ba}$ of GBW07812 and GBW07816 in different
 24 extraction duration.

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Sample	Extraction time (hours)	$C_{[\text{Ba}]}/\mu\text{g}$	$\delta^{138/134}\text{Ba}$ (‰)	2SD	n
GBW07812	2	175.6	0.35	0.03	2
	4	130.4	0.35	0.01	2
	7	77.0	0.34	0.01	2
	16	105.0	0.31	0.04	2
	24	71.6	0.30	0.02	2
	89	59.7	0.31	0.02	2
	89	92.4	0.30	0.05	2
	Average		106.7	0.32	0.05
GBW07816	2	33.5	-0.01	0.04	2
	4	10.6	-0.02	0.04	2
	7	29.9	-0.05	0.02	2
	24	23.6	0.01	0.04	2
	16	19.7	0.04	0.01	2
	89	13.8	0.03	0.01	2
	89	13.4	0.02	0.03	2
	Average		20.6	0.00	0.06

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28 Table S4. $\delta^{138/134}\text{Ba}$ of GBW07812 and GBW07816 using different sample/water
 29 weight ratios.

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Sample	Sample/water ratio	$C_{ \text{Ba} }/\mu\text{g}$	$\delta^{138/134}\text{Ba}$ (‰)	2SD	n
GBW07812	1:400	45.9	0.36	0.03	2
	1:80	71.2	0.36	0.02	2
	1:40	36.7	0.33	0.03	2
Average		51.3	0.35	0.03	6
GBW07816	1:400	57.6	0.03	0.01	2
	1:80	33.2	0.02	0.01	2
	1:40	109.7	0.02	0.04	2
Average		66.9	0.02	0.02	6

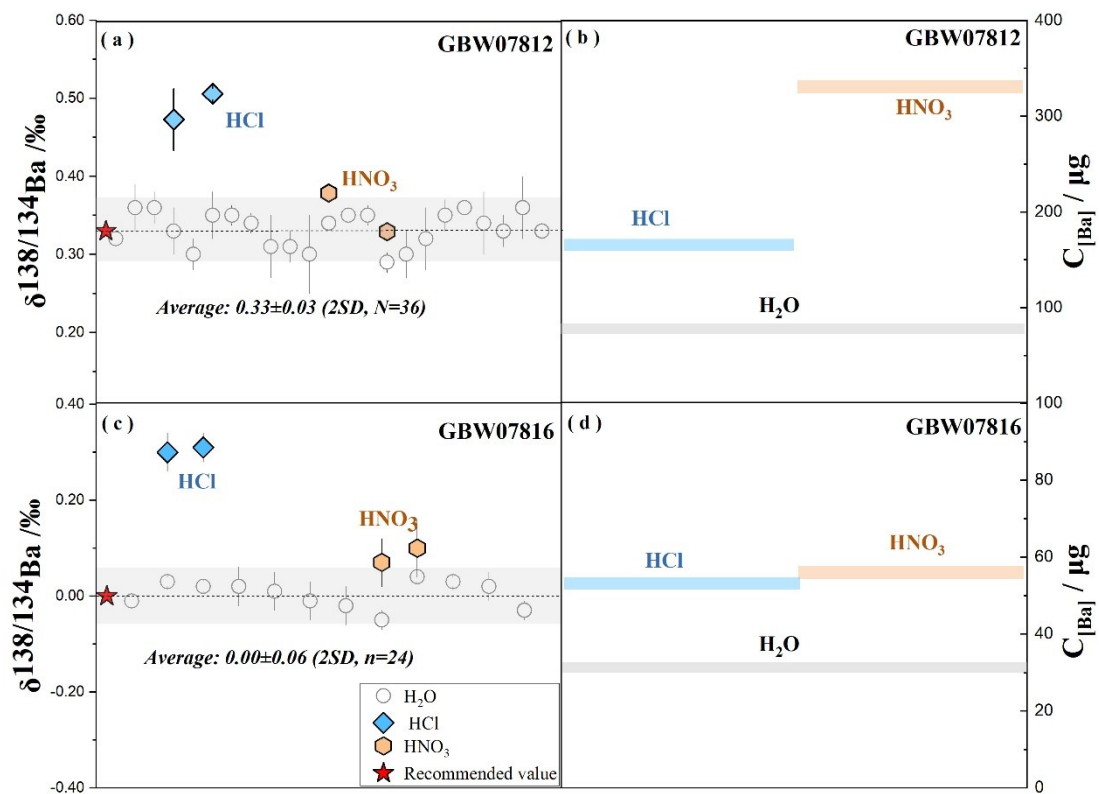
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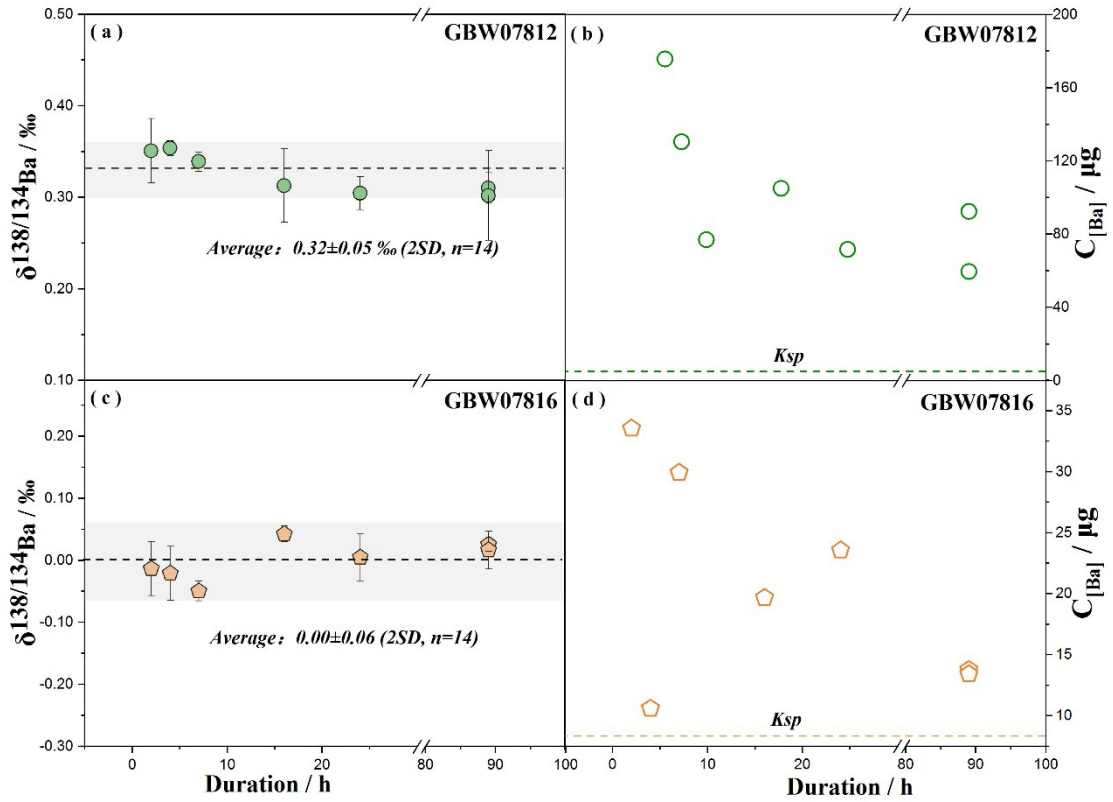
35 Fig. S1 Effect of the different extraction media on $\delta^{138/134}\text{Ba}$ analyses. Error bars
36 reflect two standard deviations. Data are available in Table S2.



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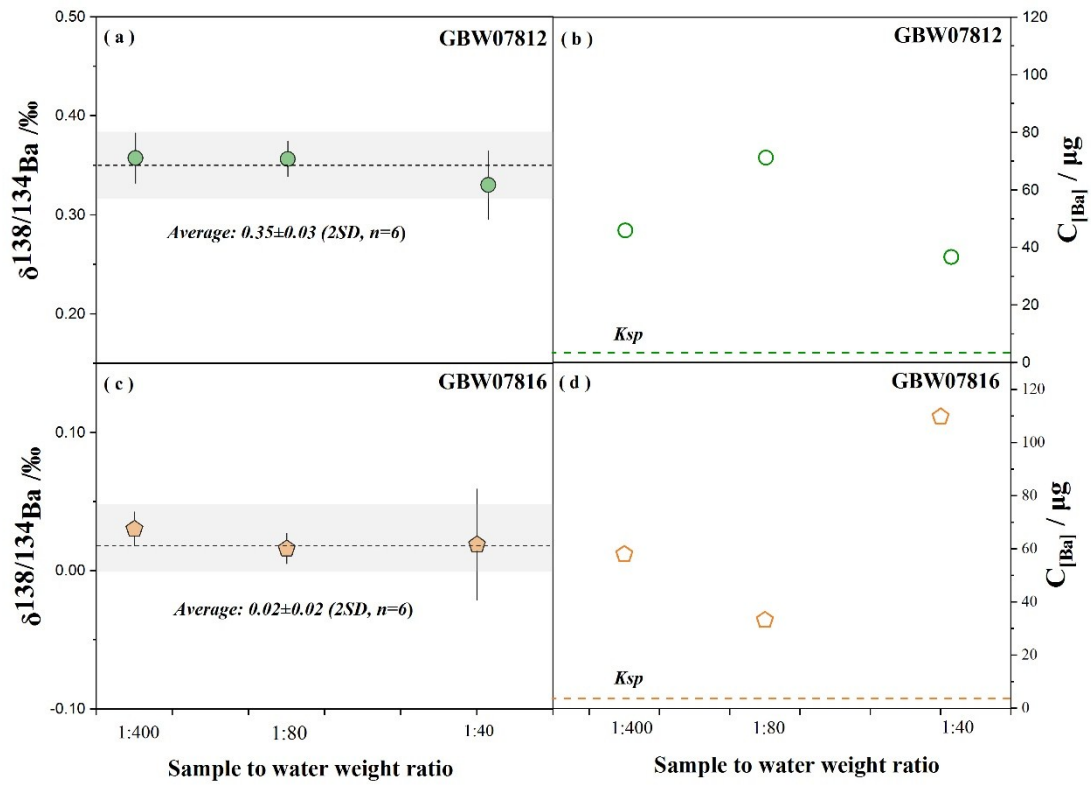
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39 Fig. S2 Effect of the different extraction duration on $\delta^{138/134}\text{Ba}$ analyses. Error bars
40 reflect two standard deviations. Data are available in Table S3.



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43 Fig. S3 Effect of the sample/water weight ratio on $\delta^{138/134}\text{Ba}$ analyses. Error bars
44 reflect two standard deviations. Data are available in Table S4.



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