
**Abstract**  Cenozoic alkaline basalt contains abundant mantle peridotite xenoliths along the boundary between Jiangsu and Anhui provinces. This paper reports the osmium isotopic compositions of whole rock for the peridotite xenoliths. Os/188Os = 0.119–0.129, which is mainly characterized as depletion. There is a significant linear correlation between the osmium isotopic composition and the major element compositions among the samples. The osmium initial ratio (187Os/188Os)0 = 0.109 comes from aluminohornblende, then the relevant model age t = 2.5(±0.1)Ga is found from the evolution model of osmium isotopic composition in the convective mantle. The Re depletion age t = 1.2Ga, is calculated from the lowest osmium isotopic ratio in the sample set. The longevity of sub-continental lithospheric mantle from osmium isotope systematics in peridotite xenoliths from Jiangsu-Anhui area indicates that they are the fragments of residual mantle after Phanerozoic thinning. The ancient formation age of continental lithospheric mantle is coupling with the age of overlying craton crust.

**Key words**  Re-Os isotope system, Age of continental lithospheric mantle, Model age, Jiangsu-Anhui provinces, Mantle peridotite
年干扰有较强的抵抗能力
运动和碰撞引起岩石圈裂解和拼合过程中
系的封闭性
老的克拉通地壳的形成时间和形成方式之间的关系
等时线通常给出寄主岩火山岩的侵位年龄
支霞臣等
著的特点是低放射成因的
相一致
同位素代用等时线法
在地幔橄榄岩捕虏体中的含量大大高于它在寄主火山岩
亏损模式年龄法
与常用的体系不同
定年是了解大陆形成
等的形成时间和形成方式
的年龄
由于非单阶段演化和源区的不确定
同位素体系定年
和地幔超基性岩形成时
破坏了同位素定年体
等时线有时给出后期
舍
$\text{O}_{2}$的
年

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XRF
Table 1  Whole rock chemical and osmium isotopic compositions of mantle-derived peridotite xenoliths from Jiangsu-Anhui area

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<td>3.34</td>
<td>3.13</td>
<td>2.40</td>
<td>3.44</td>
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<td>0.67</td>
<td>0.43</td>
<td>0.52</td>
<td>0.51</td>
<td>0.33</td>
<td>0.41</td>
<td>0.56</td>
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<td>0.30</td>
<td>1.99</td>
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<td>1.82</td>
<td>3.63</td>
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<td>2.34</td>
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<tr>
<td>MgO</td>
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<td>41.78</td>
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<td>0.02</td>
<td>0.02</td>
<td>0.03</td>
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<td>Cr₂O₃</td>
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<td>0.41</td>
<td>0.38</td>
<td>0.35</td>
<td>0.32</td>
<td>0.26</td>
<td>0.47</td>
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<td>0.35</td>
<td>0.43</td>
<td>0.43</td>
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<tr>
<td>²⁰⁸Os/²⁰⁶Os</td>
<td>0.12047</td>
<td>0.12943</td>
<td>0.12411</td>
<td>0.12564</td>
<td>0.12670</td>
<td>0.12671</td>
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<td>0.12407</td>
<td>0.12256</td>
<td>0.12652</td>
<td>0.12506</td>
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</tr>
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</table>

Sample prefixes indicate sampling location:

- FS       : Xianfeng Mountain
- PSS1     : Panshan Mountain
- PSS2     : Panshan Mountain
- PSS3     : Panshan Mountain
- PSS4     : Panshan Mountain
- PSS8     : Panshan Mountain
- PSS9     : Panshan Mountain
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- NS7      : Nanling Mountain
- NS12     : Nanling Mountain
- NS14     : Nanling Mountain
- NS16     : Nanling Mountain
- NS17     : Nanling Mountain
- NLS1     : Nanling Mountain
- NLS2     : Nanling Mountain
- NLS3     : Nanling Mountain
- NLS4     : Nanling Mountain
- NLS5     : Nanling Mountain
- NLS6     : Nanling Mountain
- NLS7     : Nanling Mountain
- NLS8     : Nanling Mountain
- NLS9     : Nanling Mountain
- NLS10    : Nanling Mountain
- NLS11    : Nanling Mountain
- NLS12    : Nanling Mountain
- NLS14    : Nanling Mountain
- NLS16    : Nanling Mountain
- NLS17    : Nanling Mountain

Rocks:

- K'       : Komatiite
- J+       : Jackdawite

- ²⁰⁸Os/²⁰⁶Os: 0.12047 0.12943 0.12411 0.12564 0.12670 0.12671 0.12370 0.12773 0.12961 0.12407 0.12256 0.12652 0.12506

The table provides whole-rock chemical and osmium isotopic compositions of mantle-derived peridotite xenoliths from the Jiangsu-Anhui area.
Fig. 1 Variation of the fusible components of mantle-derived peridotite xenoliths from Jiangsu-Anhui area

Fig. 2 Geochemical characteristics of major elements in mantle-derived peridotite xenoliths from Jiangsu-Anhui area

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(1) Morgan et al., 1991

(2) Birck et al., 1997

(Kaye et al., 1979; Boyd, 1997)

(Morgan et al., 1991)
Fig. 3 Correlation between osmium isotopic and major elements compositions of mantle-derived peridotite xenoliths

187 Os (185 Os 183 Os) Johnson Matthey (NH4)2 OsCl6 Os (NH4)2 OsCl6

4.1 Os ❄️❄️❄️❄️

4.2 Re ❄️❄️❄️❄️

4.3 Os ❄️❄️❄️❄️

4.4 Os ❄️❄️❄️❄️

SCLM ❄️❄️❄️❄️

4.5 Os ❄️❄️❄️❄️

SCLM ❄️❄️❄️❄️

Fig. 4 Evolution of osmium isotopic compositions in the convective mantle and model age of the SCLM beneath Jiangsu-Anhui area

187 Os/188 Os = 0.1283 ± 0.0008, 187 Os/188 Os = 0.1289 ± 0.0002 (23a, 23b), 0.127 (Luck and Allegre, 1983; Walker and Morgan, 1989), 0.127 (Meisel et al., 1996).

187 Os/188 Os = 0.1289 ± 0.0002 (23a, 23b), 0.127 (Luck and Allegre, 1983; Walker and Morgan, 1989), 0.127 (Meisel et al., 1996).

187 Os/188 Os = 0.1289 ± 0.0002 (23a, 23b), 0.127 (Luck and Allegre, 1983; Walker and Morgan, 1989), 0.127 (Meisel et al., 1996).

187 Os/188 Os = 0.1289 ± 0.0002 (23a, 23b), 0.127 (Luck and Allegre, 1983; Walker and Morgan, 1989), 0.127 (Meisel et al., 1996).
5.2 Re-Os 系统

Os 不含于预埋的橄榄岩捕虏体中。Burnham et al. （1998）在 Pyrenees 区域的橄榄岩捕虏体中发现 Os/188Os 为 0.125。Ronda (Alumichron) 捕虏体中的 Os/188Os 为 0.1195。Peslier et al. （2000）在 Cordillera 的橄榄岩捕虏体中获得 Os/188Os 为 0.1195。Walker et al. （1989）在 Kaapvaal 的橄榄岩捕虏体中获得 Os/188Os 为 0.1195。Re-Os 系统也同样适用于 SCLM 捕虏体中。

Re-Os 系统在 Kaapvaal、Siberia、Wyoming、Tanzanian 的橄榄岩捕虏体中获得 Os/188Os 为 0.1195。Nad-Sr 系统在 Kaapvaal、Siberia、Wyoming、Tanzanian 的橄榄岩捕虏体中获得 Os/188Os 为 0.1195。

5.3 SCLM

Os/188Os 捕虏体的形成年龄为 1.2～2.5 Ga。
References
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