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# 嵊泗岛辉绿岩墙群的侵位方式:来自磁组构的证据

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# Emplacement mechanism of diabase dyke swarms in Shengsi Island: Evidence from magnetic anisotropies

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**摘要** 岩墙磁组构能反映岩浆的侵位方式.中国东部嵊泗岛广泛发育了晚白垩世辉绿岩岩墙群.我们对其中8条不同走向岩墙进行了采样,沿岩墙两边部及横跨岩墙剖面获得共273个独立定向岩芯样品.岩石磁学分析表明辉绿岩的主要携磁矿物为多畴贫钛磁铁矿,可能含少量磁赤铁矿.各条岩墙的磁组构均具有低的各向异性度$P_j$<1.2,且主轴的空间方位各不相同,保留着原生流动磁组构特征.8条岩墙中,7条具正常磁组构,1条具倒转磁组构,且交变退磁后磁组构类型不变.黄沙村岩墙群中,北北东向岩墙为由南西向北东近水平侵位;东西向岩墙为从西向东侧向侵位.六井潭岩墙群中,北西向岩墙为从南东向北西水平侵位,北东向岩墙则为从南西向北东侧向侵位.这些侵位方式暗示了基性岩浆源可能存在于研究区的西南部的较远处.嵊泗岛岩墙群是太平洋板块向欧亚板块俯冲后的伸展阶段,受到强烈的近东西向或北北西向的拉张作用的产物.

**关键词:** 磁组构 侵位机制 辉绿岩墙群 嵊泗岛

**Abstract:** Anisotropy of magnetic susceptibility(AMS) has been extensively used in the last two decades to determine the emplacement mechanism of volcanic dykes. Late Cretaceous diabase dyke swarms are well distributed in Shengsi Island, eastern China. AMS was performed in 8 diabase dykes with distinct strikes. Rock magnetism shows that multidomain Ti-poor titanomagnetites with trace maghemites carry the magnetic fabrics in diabase dykes. The corrected anisotropy degree ($P_j$) of all specimens is less than 1.2, indicating an original fabric. The dimensional orientations of three susceptibility axes of different dykes are completely different. Two types of AMS fabric are recognized: (1) 'Normal' fabric (7 dykes) defined by the clustering of $K_1$-$K_2$ axes on the dyke wall whereas $K_3$ axis is nearly perpendicular to the wall, which is interpreted as fabrics induced by magma flow; (2) 'Inverse' fabric (1 dyke) defined by $K_2$-$K_3$ plane parallel to the dyke wall and $K_1$ perpendicular to dyke wall. Types of AMS fabric are not changed after AF demagnetization at 100 mT. According to the analysis of the imbrications of magnetic foliations with the dyke walls, we can infer magma flow direction: (1) In Huangsha Village, the NNE-trending dyke is fed by horizontal or sub-horizontal flow from southwest to northeast, while the EW-trending dyke is laterally injected from west to east; (2) At Liujingtan, the NW-trending dyke is laterally injected from southeast to northwest while the NE-trending dyke from southwest to northeast. This emplacement mode suggests that a mafic magma source may exist in the southwestern area far away from the study area. The diabase dyke swarms at Shengsi Island are the products of strong EW-trending or NNE-trending lithosphere extensions induced by Pacific Plate subducting to Eurasian plate.

Keywords: AMS Emplacment mode Diabase dyke swarm Shengsi Island

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