TEXTURES INDICATING CRYSTALLIZATION FROM SUPERSATURATED MAGMAS IN THE MESOZOIC GROSS SPITZKOPPE GRANITE STOCK IN WESTERN NAMIBIA

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The origin and emplacement of the Mesozoic Gross Spitzkoppe granite stock and associated bimodal dyke swarm are related to the opening of the southern Atlantic. The stock is composed of highly evolved topaz-bearing A-type, within-plate granites. Subhorizontal =20-m wide aplite dykes and thinner steeply dipping pegmatite and aplite dykes cut the granites. The outer contact of the stock and upper contacts of the subhorizontal aplite dykes are marked by stockscheiders. The stockscheiders are composed of banded pegmatites and banded aplites or line rock that often show colloform textures. The banding is characterized by rhythmic variations in grain size and mineral composition. Regular orientation of tapered or dendritic alkali feldspar megacrysts graphically intergrown with quartz indicate unilateral growth against the heat flow: in the marginal stockscheider towards the center of the stock, in the subhorizontal aplite dykes downwards, and in some steeply dipping aplite-pegmatites from both margins inwards. An irregular dyke of orbicular granites with alkali feldspar nuclei cuts the outer part of the stock. The banded and orbicular textures and the skeletal or tapered alkali feldspar megacrysts are interpreted to have formed by rapid growth and oscillatory nucleation from undercooled magmas.