

LETTER

Onion morphology and microstructure of polyhedral serpentine

**ALAIN BARONNET,^{1,*} MURIEL ANDRÉANI,^{2,†} OLIVIER GRAUBY,¹ BERTRAND DEVOUARD,³
SERGE NITSCHÉ,¹ AND DAMIEN CHAUDANSON¹**

¹Paul Cézanne University and CRMCN-CNRS, Campus Luminy, 13288 Marseille cedex 9, France

²Géosciences Marines- IGP, Place Jussieu, 75252 Paris cedex, France

³Laboratoire Magmas et Volcans, Blaise Pascal University, OPGC, CNRS, 5 rue Kessler, 63000 Clermont-Ferrand, France

ABSTRACT

We describe the shape and internal structure of polyhedral spheroids found in serpentized peridotites. Serpentine spheroids resemble geodesic domes made of ~160 to 180 triangular facets. At facet edges, the nested layers bend by ~14° along their three <010> crystallographic directions, resulting in an onion-like structure with lateral continuity of the layers. The stacking of the serpentine layers within sectors is controlled by interlayer bonding. These polyhedral onions correspond to a novel type of spherical nanostructure for layered materials.

Keywords: Serpentine minerals, microstructure, onion, spheroid, SEM, TEM