Ontogeny of barite crystals grown by gel technique

Prieto, M.; Arribas, J.G.; López-Andrés, S. and Fernández-Diaz, L.

Dpto. Cristalografía y Mineralogía. Univ. Complutense. 28040-MADRID.

The growth history of $BaSO_4$ crystals in silica gel acidified with HCl has been studied. Crystal growth was carried out by employing a U-tube arrangement. The U-tubes employed provide three different path lengths. Different reagent concentrations were also used. So, the experiences were carried out at different supersaturation velocities. Supersaturation evolution was found by chemical mass-transfer testing.

A morphological evolution (space and time) from skeletal and dendritic growth (along [010]) to single crystals with equilibrium shape has been observed. As a result, the final idiomorphic crystals show "internal morphologies". For instance, initial stages of dendritic growth lead to "candle flame" inclusion formation. Such inclusion are placed in both crystal ends, along [010].

The morphogenetical process is related to the growth mechanism dominating during the different growth stages. This explanation agrees with the supersaturation distribution that has been observed and with the surface details studied by Scanning Electron Microscopy.