

Prof. Ekhard Salje

Department of Earth Sciences, University of Cambridge

Microstructures and Complexity

Domain boundaries can carry information and act as memory devices which can be read electrically or magnetically. Domains are bulk objects, their large response to changing external fields is related to their change in volume which implies the movement of domain boundaries. In many cases, the design of ‘optimal’ domain structures corresponds to ‘optimal’ domain boundaries with parameters such as the domain boundary mobility, pinning properties and the formation of specific boundaries such as curved boundaries in needle domains. In this talk the argument is enhanced further: domain boundaries can host properties which are absent in the bulk, such as multiferroic properties, metallic or semiconductor behaviour in an insulating matrix, and chirality. Some of the fundamental aspects are discussed.