# Nematic Defect Structures in a Cylindrical Cell

M. Slavinec[a], R. Rosso[b], E.G. Virga[b], S. Kralj[a]

*a Faculty of Natural Sciences and Mathematics, University of Maribor, Koroska 160, 2000 Maribor, Slovenia*
*b Department of Mathematics. University of Pavia, Via Ferrata 1, Italy*

Structural characteristics of a nematic liquid crystal confined to a hybrid cell of thickness h are studied by means of Landau-de Gennes phenomenological approach. The nematic structures are described by the tensorial nematic order parameter. Cylindrically symmetric solutions containing topological defects, imposed by specific choice of boundary conditions, are considered. We study cells of thickness $h>\xi$, where $\xi$ is the biaxial order parameter correlation length. For such severe confinements order reconstruction-type configurations could be stable. Structural characteristics are studied which reflect the interplay among surface frustration, surface anchoring strength, elastic distortions and finite size effects. Topologically different solutions are discussed using appropriate order parameter space mapping. Conditions are determined where the threshold for the onset of the order reconstruction-type configurations can be relatively strongly controlled by modifying boundary conditions.