

## **Self-organization of inclusions with various topological charge and topological dipole moment in smectic films**

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The interaction and self-organization of inclusions with different topological dipole moment and topological charge in ferroelectric smectic films was studied. We found that the value and orientation of the topological dipole moment of inclusions could be changed in a controllable manner. We report the first observations in smectic films of inclusions with antiparallel directions of the topological dipole moment and investigated their interaction. A method of changing the interparticle distance in structures formed by inclusions is reported. By this way the interparticle distance may be changed in several times.

For the first time, self-organization of inclusions with different topological charge ( $S=-1, 0, +1$ ) in liquid crystals has been studied. The formation of ordered structures from inclusions with nonzero charge differs sufficiently from the self-organization of inclusions with  $S=0$  described earlier. A new mechanism of chain formation was found and studied. Point topological defects with charge  $S=-1$  may act as centers of successive droplet nucleation that form line chains in smectic films.

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