

On mechanism of spatial quasi-crystalline organization of oxyhydrate gels

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Abstract

The article dwells upon the theoretical framework of pseudo-crystallites formation in chemical colloid systems. Any periodic disturbance along the Z, even indefinitely small one, results in destruction of separatrices and emersion of the final domain of the current thread stochastic dynamics in vicinity of the destructed separatrices. It signifies that a current thread web appears in the X,Y,Z-space. Inside the current thread web remain small areas (islets) of sustained current thread dynamics, which is to say that the current threads regularly coil around an invariant surface (forming current tubes). Some oscillatory coils of the phase pattern correspond to zeros of the Bessel function that determinates the interaction potential of the particle motion. Intersection points of oscillation coils are, in fact, the areas of destruction of the separatrices that feature higher diffusion conductance and certain spatial trend forming the crystallite structure. Such an approach is fundamentally different from Arnold's purely hydrodynamical A,B,C-flow, as features of a structured chemical colloid flow, which occurs at the trend destruction of oscillation separatrices, are ascribed to it.