



سمینار هفتگی ماده چگال نرم

Analysis and simulation of cell migration using VCM software

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Abstract

Cells in their surrounding environment subjected to biochemical and biomechanical stimuli and respond to this signals. The mechanism by which cells transduce mechanical signals into responses is called Mechanotransduction and cell use this mechanism to sense and respond to extracellular signals. Cell migration is one of the most important responses to Cell-ECM interaction [1]. This migration underlies many biological processes including embryogenesis, wound healing, tumorigenesis, morphogenesis and immune defense [1-3], so the study of cell migration is of particular importance. Cell directional movement include movement from soft regions to stiff regions (durotaxis), movement in direction of gradient of soluble (chemotaxis) and movement in response to extracellular matrix topographic features [1, 4, 5]. In this work we suggested a simple model for mechanical structure of adherent cell and used this model to study cell migration. For this purpose we developed virtual cell model (VCM) software in soft condensed matter group at Sharif University of Technology and used this software to simulate cell mechanical behaviors and migrations.

References

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