

Abstract Submitted  
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**Importance of spectrin network reorganization in computer simulations of RBC shapes**<sup>1</sup> ULF SCHILLER<sup>2</sup>, TONY LADD, Department of Chemical Engineering, University of Florida, Gainesville — The shape of red blood cells (RBCs) has been the subject of intensive investigations in both experiments and theoretical models. Various computational models for RBCs have also been developed. However, a rigorous quantitative comparison of the observed shapes is still lacking. We have developed a flexible model that allows to study the influence of the various contributions to the membrane stress and their relevance for RBC shape. Our model reveals that a pure curvature model does not fully explain the experimentally observed discocyte shapes. We demonstrate that the in-plane stresses of the spectrin network have a crucial effect on the cell shapes and their transitions, and that the dynamic relaxation of the stresses due to spectrin reorganization is important. We present an extended model that incorporates the effects of dynamic spectrin remodeling and study their role on the dynamics of RBC shapes.

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