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Coarse-grained area-difference-elasticity membrane model coupled with IB-LB method for simulation of red blood cell morphology

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**Highlights**

- A coarse-grained model is proposed to study morphology of red blood cells.
- Both bending energy and area-difference-elasticity energy are included.
- Automatic differentiation is used to calculate gradient of the energy.
- Prolate–oblate–stomatocyte transition is observed with decreasing volume.
- Stomatocyte–discocyte–acanthocyte transition occurs with increasing area difference.