

## **Study of shapes and shape transformations of vesicles induced by their adhesion to a rigid surface**

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Shapes and shape transformations of vesicles have a biological importance, for e.g. the shape of the cell is closely related to its functional property, they also play a role in the cell's interaction with its environment or in the characterization of certain diseases. In this work, shape transformations of lipid vesicles induced by their adhesion to a rigid surface have been investigated. The calculations are performed using the Helfrich spontaneous curvature model for a few values of reduced volume and spontaneous curvature. The range of stability of different vesicles have been identified under adhesion for the parameters studied. Oblate shaped vesicles have been further investigated under varying reduced volume values for spontaneous curvature zero and it has been concluded that the concave oblates adhere easily as compared to the convex shaped oblates.



Different configurations of adhered vesicles. The dark area shows the membrane attached to the flat surface.

Jeel Raval and W.T.Gózdź. Shape Transformations of Vesicles Induced by Their Adhesion to Flat Surfaces. *ACS Omega* 2020, 5, 26, 16099–16105

**IV Konferencja Doktorantów Polskiej Akademii Nauk**

*4<sup>th</sup> Conference of the PhD Students of the Polish Academy of Sciences*