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The Tendency of Nature towards Hexagon Shape Formation due to Minimizing Surface Energy

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Abstract:
Nature, for instance, bubble and honeycomb, tend to form a hexagon shape naturally. The array of bubbles and honeycomb is formed by merging and sharing the common wall with the adjacent unit. Even though each of the unit shapes size may vary, the noticeable elements that built up the array are hexagons. There are many regular and irregular shapes available in nature, but the shape formation still leads to hexagon at the end of the shape evolving due to surface tension. Based on the phenomenon, this study was carried out to investigate the effect of surface tension, energy, and geometry features, which affect the tendency of hexagon formation. The study was carried out by comparing hexagon with triangle, trapezium, and square. From the result, it is found that the reduction of surface energy ranged from 10-23 percent from the initial shape. As expected, the hexagon shape is packed with the lowest surface parameter and very stable in single unit or array form by showing the lowest energy reduction. The energy content is a reflection to structure equilibrium and its stability for nature tendency.