

## عنوان مقاله:

The Effect of Additive Elements on Surface of Polyvinyl Chloride and investigation of its Floatability properties

## محل انتشار:

اولین کنگره بین المللی علوم، مهندسی و فن آوری های نو (سال: 1401)

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## نویسنده:

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## خلاصه مقاله:

The Polyvinyl chloride (PVC) plastics with additives such as calcium carbonate ( $\text{CaCO}_3$ ) or di-n-octyl phthalate (DnOP) were selected to investigate the effects of additives on the surface of PVC plastic, and a floatability test was performed to study the ability of PVC to float on them. The surface free energy of the original and polished PVC plastics shows that the crushed and fragmented parts in floating systems introduce the exact properties of the plastic surfaces and additives have significant effects on the surface free energy of PVC plastics. Adding calcium carbonate increases the force of attraction between the surface of plastic and water, and on the other hand, reduces the force of adhesion between water bubbles and the surface of plastic, and as a result, the floatability of PVC decreases. DnOP reduces the attractive force between plastic and water and increases the adhesive force between bubble and plastic, so as floatability increases, the hydrophobicity of plastic increases. The floatability test of PVC plastics and its waste confirmed the above result. The infrared spectrum of two pieces of plastic waste confirmed the effects of adding materials on PVC. Conclusion The above has provided an in-depth insight into flotation techniques and attention to plastic separation and especially PVC waste recycling.

## کلمات کلیدی:

Additive, Floatability, PVC Plastic, Interaction Free Energy, Surface Free Energy

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