

3RD WORLD CHEMISTRY CONFERENCE &
World Congress on
BIOTHERAPEUTICS AND BIOANALYTICAL TECHNIQUES
September 11-12, 2017 Dallas, USA

Inconsistencies in theoretical analysis of Archimedes principle

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The consistency of mathematical equation requires values of (n-1) variables to calculate the then value of nth variable. The value of nth variable must turn out definite and logical, otherwise there will be serious mathematical inconsistency in the law or equation it is based on. Then predictions of equation are experimentally checked for final confirmation. Under some feasible conditions from Archimedes principle in case of completely submerged balloons, the nth variable is not determined if (n-1) variables are given. Under these conditions for example, density of material filled inside the balloon (and that of sheath) is equal to the density of fluid (say water) in which balloon floats is the same. Under these conditions the density of medium (D_m), volume of sheath, density of sheath etc., are correctly determined mathematically, but the volume of material filled in the sheath comes out be indeterminate i.e. $V = 0/0$. Thus the principle is generalized i.e. upthrust is proportional to weight of fluid displaced ($U = fVDg$). Then repeating the same calculations with identical values of parameters, exact value of volume filled inside the balloon i.e. $V = V$ is obtained. Thus the generalized form is theoretically justified. Further analysis found that, f is the coefficient of proportionality which accounts for shape of body, viscosity of medium, magnitude of medium and body or particle, nature of interactions, surface tension and other relevant elusive effects etc. Archimedes principle excludes these values. Some specific experiments are suggested to experimentally measure the value of f. Such specific and diverse experiments have not been conducted in the existing literature, which is novelty and significance of the experiments. These experiments have nobility as never reported in the literature; nonetheless the principle is 2267 years old. The contradictory results from Archimedes principle have been found in ultracentrifugation experiments involving nanoparticles.

Biography

Ajay Sharma has started his carrier as Lecturer of Physics at DAV College Chandigarh. Currently, he is a Research Scholar (having passed BSc and MSc degrees with first division) at Central University of Himachal Pradesh Dharmashala. His field of interest is Fundamental Law of Science. In one of his papers, he had generalized Archimedes Principle from its theoretical calculation which is part of both Physical Chemistry and Basic Physics. He has proved systematically, that effects of shape of body and viscosity of fluid are missing from Archimedes Principle. He is trying to confirm his theoretical predictions experimentally at National Physical Laboratory, New Delhi. He has already published about 60 articles in international journals, conferences and peer reviewed scientific magazines. His recent conference was in Moscow in year 2014. Currently, he is Secretary of the Fundamental Physics Society, Shimla.

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