

Defining the Acidity of a Solution During Mechanical and Relativistic Compression

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Acidity is a solution attribute. Sorensen has defined pH as a measure of acidity. He used Molarity of hydrogen ions. In standard laboratory conditions pH follows the acidity of a solution, and represents its measure. During the compression of a system, or in relativistic circumstances, a deviation appears from the value in standard laboratory conditions. However during both mechanical and relativistic compression the acidity does not change. Acidity can only be changed by changing the quantity of dissolved substance or the solvent. A disagreement of quality (acidity) and its measure (pH) appears. In these circumstances the paper suggests the use of a new value pc_H . It presents a measure of acidity analog to the pH. This value should be valid in both diluted and concentrated solutions, and also should give exact projection of acid-base status in the case of both mechanical and relativistic compression. This can be achieved by defining pc_H as a negative logarithm of mole fraction of hydrogen ions in a solution. Considering that the mole fraction does not contain the volume value, pc_H gives an exact projection of acid base status in a compression of any kind. The pc_H value is valid in both diluted and concentrated solutions. The Special Theory of Relativity has been used as a tool for analyzing changes of both acidity and its measure during the compression of a system.