

Abstract Submitted
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Osmotic Pressure: Conceptions & Misconceptions from Pfeffer, to Van't Hoff, to Einstein, to Fermi, to the Present THEODORE R. REIFF
— A phenomenological approach to understanding osmotic pressure in terms of competing effects of solute-solvent, solute-solute, and solvent-solvent interactions helps to avoid the misconceptions about osmotic pressure that were held by Van't Hoff, Einstein, Fermi, and many others. It also provides a better understanding of the concept of “negative” osmotic pressure and its role in explaining water of crystallization, gel syneresis, and in biological tissue aging and pathological states. Negative osmotic pressure may be conceptualized as due to a transient metastable state wherein the chemical potential of solvent is temporally increased above that of pure solvent in the standard state. Measureable changes in differential osmotic pressure-volume relationships of osmotic systems are readily related to differential changes in solvent chemical potential and number of mols of solvent in a system.

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