On the Thermal Expansion of Water and the Phase Behavior of Macromolecules in Aqueous Solution

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Water is crucial for the existence of life as we know it, and many have wondered what makes water so special. Here we point out the analogies between the pressure-temperature dependence of the isobaric thermal expansion of water ($\alpha_p$) and the pressure-temperature phase behavior of macromolecules in aqueous solutions. We suggest that $\alpha_p$ could be the key to understand why water is to be the so-called ‘matrix of life’.

Key words: Water, Thermal Expansion, Polymers, Protein Stability, Phase Diagram