

Physico-chemical properties of water and its hexameric cluster

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Abstract

The value of the product of the molar mass to the value of Wiener topological index to the power $2/3$, designated as J_w , is used to describe the physical and chemical properties of water and a number of proton donor organic liquids. The structure of water is considered in the form hexameric and decameric cluster. Organic liquids are considered in the form of dimeric and trimeric associates. For the values of J_w , corresponding to specified supramolecular structures, correlations are built with saturated steam at a pressure 432.2 K, boiling point, density, surface tension, viscosity, molar heat capacity and enthalpy of melting. In all cases, the values corresponding to water clusters formed a single array with similar values for the associates of organic liquids, which is seen as a natural phenomenon. Aqueous stability of hexameric cluster has been marked. The assumptions are made about the reasons for its stability.