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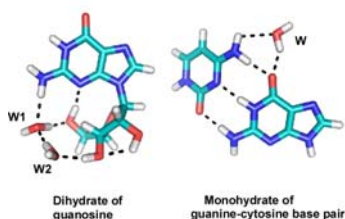
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Microhydration of the guanine nucleosides and base pairs*H. Saigusa*¹

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Microhydrated clusters of guanine nucleosides and base pairs are formed by laser desorption combined with supersonic-jet cooling, and their structures are elucidated by infrared spectroscopy and ab initio calculations. The results obtained for the nucleosides indicate the presence of specific hydrogen-bonding structures around the guanine moiety and sugar group. It is also shown that the dihydrate structures of guanosine and 2'-deoxyguanosine differ significantly each other due to the presence or absence of the 2'-OH group. Microhydration effects of the guanine base pairs have also been investigated for the homodimer of guanine and the heterodimer of guanine and cytosine. In both cases, it appears that the most stable base pair structure is essentially unaffected by the addition of water. Thus, the Watson-Crick GC base pair structure is retained in the monohydrate. Although the calculation suggests that stacked base pairs are significantly stabilized by the hydration, no monohydrates of the stacked form have been identified in the present experiment.



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