Vibrational spectra of o-hydroxyphenyl Schiff bases and related compounds.

Autorzy

Aleksander Filarowski

Aleksander Koll

Lucjan Sobczyk

Rok wydania

2009

Czasopismo

Current Organic Chemistry

Numer woluminu

13

Strony

287-298

DOI

10.2174/138527209787314823

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

The specific features of intramolecular OH···N hydrogen bonds in o-hydroxyphenyl Schiff bases are discriminated. They are identified as resonance assisted low-barrier hydrogen bonds. The properties of such bridges are best reflected in infra-red absorption spectra and particularly in the stretching OH or NH bands. As shown, the most characteristic is the low intensity of these bands. The discussion is presented for a number of examples represented by the Mannich and Schiff bases, 2-hydroxybenzamides as well as by liquid crystalline o-hydroxyphenyl Schiff bases and ohydroxyazobenzenes. The interaction effects through the bifurcated hydrogen bonds between the chelate rings are distinguished. Based on the quantum mechanical calculations the potential energy curves describing the proton motion are analysed for the isolated molecules and condensed phases showing a high anharmonicity. In the last part of the review the infra- red spectra in the finger print region are analysed from the point of view of tautomeric equilibria related to the proton transfer.