

## HIGH-RESOLUTION LASER SPECTROSCOPIC STUDIES OF UROCANIC ACID AND DERIVATIVES: TOWARDS NOVEL NATURE-INSPIRED SUNSCREENS

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Trans-urocanic acid (UA) is found in the outer layer of human skin, where -due to its favorable UV absorption properties- it is thought to act as a natural sunscreen protecting DNA from photodamage. In recent decades it has become clear, however, that the cis-isomer produced upon irradiation has immunosuppressive properties, which is the main reason that UA is no longer employed in commercial sunscreen formulations. As a basic chromophore UA is nevertheless an excellent starting point for the development of potentially harmless nature-inspired sunscreens. Key to such efforts is a fundamental understanding of the photochemistry and photophysics of UA on which there are still quite a number of unresolved questions, and how substitutions affect these properties. Here we report on molecular beam studies of (substituted) UA compounds using Resonance Enhanced MultiPhoton Ionization (REMPI) spectroscopic techniques that demonstrate that previous conclusions need to be revised. Together with FT-IR and UV/Vis absorption studies of these compounds in various solvents they provide a comprehensive view on the photoactive properties of these compounds, as well as the influence of the presence of different conformers and tautomers.