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Resonantly Enhanced Multiphoton Ionization Circular Dichroism (REMPICD) WATHEQ AL-BASHEER, RUNHUA LI, RODNEY SULLIVAN, RICHARD PAGNI, ROBERT COMPTON, The University of Tennessee Knoxville — Linear and non-linear circular dichroism of *R*-(+)-3-methylcyclopentanone is reported in the gas and liquid phase. Measurements of (2+1) resonance-enhanced multiphoton ionization circular dichroism (REMPICD) for nozzle-jet expanded molecular beams of the equatorial conformer of *R*-3MCP are presented. Monitoring either mass-selected cations or photo-electrons produced via (2+1) REMPI through the $n \rightarrow 3s$ Rydberg transition yielded a REMPICD of $+1.5\pm 0.5\%$ [REMPICD $\equiv 2(I_L - I_R)/(I_L + I_R)$, where $I_{L/R}$ refers to the ion/electron signal for left-/right-circularly polarized light. A racemic mixture of 3-methylcyclopentanone showed no significant CD. The REMPICD is larger and of opposite sign than the 1-photon CD at the $n \rightarrow 3s$ transition. It appears that the REMPICD is dominated by the continuum transition. Measurements of 1-photon CD as a function of temperature provides information on the enthalpy difference between the equatorial and axial conformers of 3MCP. Density Function Theory calculations also support these measurements.

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