

## Development of High Sensitive and Time-resolved Circular Dichroism Detection Method –*Toward the Analyses of Supramolecular Dynamics* –



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A new circular dichroism (CD) measurement system based on the detection of elliptically polarized light has been proposed. The approach has several unique and inherent advantages, such as sensitivities, reliability, and reproducibility, over the conventional systems and Kliger's pioneering work. We have re-derived the Jones calculus and introduced the angular term into the formulation revealed that this approach should improve the signal intensity by controlling the light ellipticity. Therefore, we have firstly demonstrated the hypothesis by the quantitative analysis of the signal intensity measuring of the split-type CD pattern of Tris(bipyridine) ruthenium (II) chloride with the system. The CD signals increased with decreasing the azimuth of retarder was clearly observed, and then enabled to detect CD signal with high sensitivity. Based on the constructed CD measurement system, some photo-excited state and steady state dynamics of a supramolecules, nucleic acids and protein was investigated.