

UTILIZING POLARIMETRY TO CHARACTERIZE TISSUE SAMPLES AFFECTED BY COLLAGENOSIS

Tsanislava GENOVA *,¹ Lidia ZAHARIEVA,¹ Petranka TROYANOVA,² Ivan TERZIEV,²

¹*Institute of Electronics, Bulgarian Academy of Sciences, Bulgaria, 72 Tzarigradsko chaussee blvd.,
Sofia, Bulgaria*

²*University Hospital "Tzaritza Yoanna – ISUL", 5 Byalo more str., Sofia, Bulgaria
ts.genova@gmail.com

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Polarimetry as an emerging optical modality in diagnostics, offers valuable insights into the structural changes within tissues. Collagenosis diseases are manifested in alterations in collagen structure or metabolism and affect mostly connective tissues. Diagnosing these conditions is challenging due to the lack of clear-cut symptoms.

In this study, we present the results of our evaluation of histological tissue slides using Stokes polarimetry in transmission geometry. Our goal was to investigate and characterize the fundamental polarimetric properties of histological samples from different cutaneous degenerative conditions such as psoriasis, lupus, scleroderma and Syndrome of Raynaud. Both stained and unstained histological samples were utilized for polarimetric measurements, aiming to analyze the potential of polarimetry to differentiate between skin degenerative alterations.

For irradiating the samples and performing polarimetric measurements, a diode laser with a wavelength at 635 nm was employed, and a polarimeter operating within the visible spectral range of 400-700 nm was utilized.

The evaluation enables the analysis of skin degenerative alterations in collagen's anisotropic structuration within the extracellular matrix, thereby providing indicators of tissue condition. This research will contribute to the development of a comprehensive database of polarimetric features for various skin conditions.

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