

Abstract Submitted  
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**Computational Approach for Quantifying Structural Disorder in Biomolecular Lattices** CLAYTON BRATTON, University of California, Davis - Physics, KAREN REISER, University of California, Davis - Neurosurgery, ANDRE KNOESEN, DIEGO YANKELEVICH, MINGSHI WANG, University of California, Davis - Electrical and Computer Engineering, ISRAEL ROCHA - MENDOZA, Cardiff University, Cardiff, Wales - Cardiff School of Biosciences — We have developed a novel computational approach for quantifying structural disorder in biomolecular lattices with nonlinear susceptibility based on analysis of polarization-modulated second harmonic signal. Transient, regional disorder at the level of molecular organization is identified using a novel signal-processing algorithms sufficiently compact for near real-time analysis with a desktop computer. Global disorder and regional disorder within the biostructure are assessed and scored using a multiple methodologies. Experimental results suggest our signal processing method represents a robust, scalable tool that allows us to detect both regional and global alterations in signal characteristics of biostructures with a high degree of discrimination.

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