

# Hierarchical Model of Fibrillar Collagen Organization for Interpreting the Second-Order Susceptibility Tensors in Biological Tissue

Adam E. Tuer,<sup>†‡§</sup> Margarete K. Akens,<sup>¶</sup> Serguei Krouglov,<sup>†</sup> Daaf Sandkuijl,<sup>†‡§</sup> Brian C. Wilson,<sup>||</sup> Cari M. Whyne,<sup>¶</sup> and Virginijus Barzda<sup>†‡§\*</sup>

<sup>†</sup>Department of Physics, University of Toronto, Toronto, Ontario, Canada; <sup>‡</sup>Department of Chemical and Physical Sciences, University of Toronto Mississauga, Mississauga, Ontario, Canada; <sup>§</sup>Institute for Optical Sciences, University of Toronto, Toronto, Ontario, Canada; <sup>¶</sup>Orthopedic Biomechanics Laboratory, Sunnybrook Research Institute, Toronto, Ontario, Canada; and <sup>||</sup>Ontario Cancer Institute, University Health Network, Toronto, Ontario, Canada

Susceptibility Tensors of Collagen

Tuer et al.

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\*Correspondence: [virgis.barzda@utoronto.ca](mailto:virgis.barzda@utoronto.ca)

# Supporting Material

## Asymmetry

To measure the asymmetry of the PIPO plots, the following formula was utilized:

$$a = \left\langle \left| \frac{I(\theta, \varphi) - I(-\theta, -\varphi)}{\frac{1}{2}(I(\theta, \varphi) + I(-\theta, -\varphi))} \right| \right\rangle \quad (\text{S.1})$$

where  $I(\theta, \varphi)$  is the SHG intensity for the angles  $\theta$  and  $\varphi$ , which are defined from 0 to  $\pi/2$ . This measure of asymmetry has distributions centered on zero for both parallel (tibia cortical bone) and non-parallel (dermis and cornea) containing tissue distributions, with the non-parallel fibril distribution having a more pronounced tail than the parallel fibril distribution (Fig. S1). The uncertainty in the asymmetry is approximately  $\pm 0.05$ .

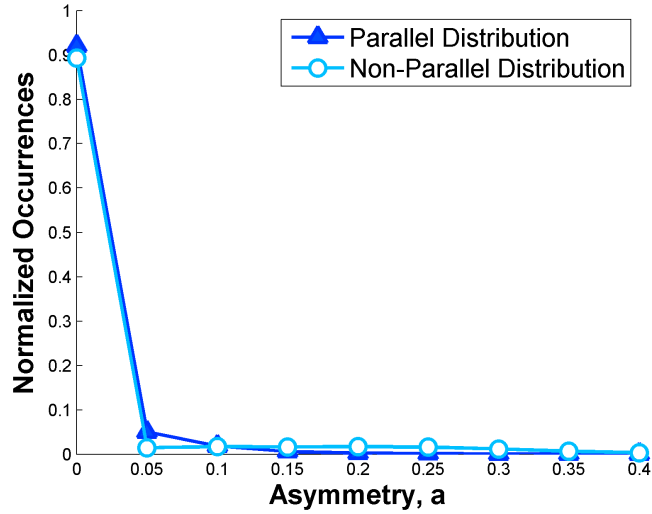


Fig. S1. Histogram of asymmetry defined by Eq. S1 for parallel and non-parallel fibril distributions.