Supplemental Document

Biomedical Optics EXPRESS

Narrowband diffuse reflectance spectroscopy in the 900–1000 nm wavelength region to quantify water and lipid content of turbid media: supplement

JESSE H. LAM,[1,2] KELSEY J. TU,[3] AND SEHWAN KIM[2,3,*]

[1] *University of California, Irvine, Beckman Laser Institute, Department of Biomedical Engineering, Irvine, CA 92612, USA*
[2] *Dankook University, Beckman Laser Institute Korea, School of Medicine, Cheonan, Chungnam, Republic of Korea*
[3] *Dankook University, Department of Biomedical Engineering, Cheonan, Chungnam, Republic of Korea*
[*] *paul.kim@dankook.ac.kr*

This supplement published with The Optical Society on 4 May 2021 by The Authors under the terms of the Creative Commons Attribution 4.0 License in the format provided by the authors and unedited. Further distribution of this work must maintain attribution to the author(s) and the published article's title, journal citation, and DOI.

Supplement DOI: https://doi.org/10.6084/m9.figshare.14498577

Parent Article DOI: https://doi.org/10.1364/BOE.425451

Narrowband diffuse reflectance spectroscopy in the 900-1000 nm wavelength region to quantify water and lipid content of turbid media: supplemental document

Supplementary Figure S1: Scattering assumptions

Several reduced scatting profiles, as shown in Fig. S1, were investigated in this work in order to demonstrate the insensitivity of our method to scattering assumptions. Flat scattering was assumed over wavelength for two cases, whereas scattering was quantified using a frequency domain photon migration device for the last case [1]. Using these different scattering options, we determined that our method to estimate the ratio of water and fat in tissue remained consistent within 1-2%.

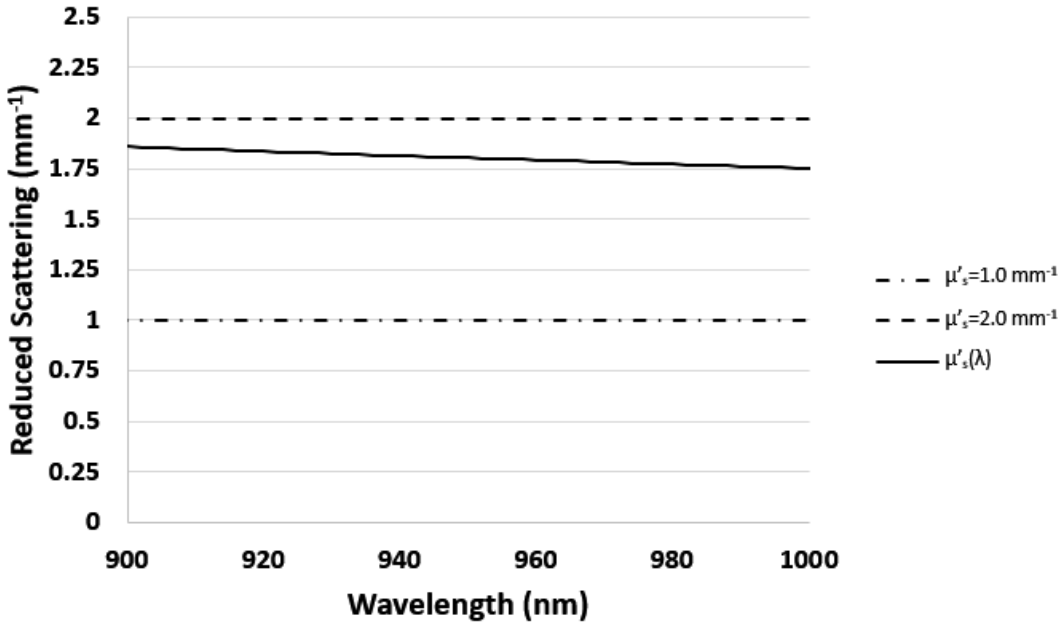

Fig. S1. Scattering profiles used in Figure 5 and Figure 6. Two reduced scattering assumptions are shown flat over wavelength (μ'_s=1.0 mm^{-1} and μ'_s=2.0 mm^{-1}) as the two dashed lines. Scattering also quantified by a frequency domain photon migration device ($\mu'_s(\lambda)$) and is also shown as the solid line.

Supplementary table S1: Analytical chemistry to extract moisture in porcine tissue

Analytical chemistry was used in this work to quantify the moisture content in porcine samples based on 950.46 AOAC. For Samples A and B, we perform 4 trials after blending the samples separately. The results of the moisture analysis for each trial are shown in Table S1.

Table S1: Tabulated moisture content from porcine samples A and B using analytical chemistry methods.

	Sample A	*Sample B*
Trial 1	0.4294	0.5531
Trial 2	0.4152	0.5534
Trial 3	0.4479	0.5385
Trial 4	0.4441	0.5824

References

1. F. Bevilacqua, A. J. Berger, A. E. Cerussi, D. Jakubowski, and B. J. Tromberg, "Broadband absorption spectroscopy in turbid media by combined frequency-domain and steady-state methods.," Appl. Opt. **39**(34), 6498–6507 (2000).