Supplementary Materials

Upconversion Spectral Rulers for Transcutaneous Displacement Measurements

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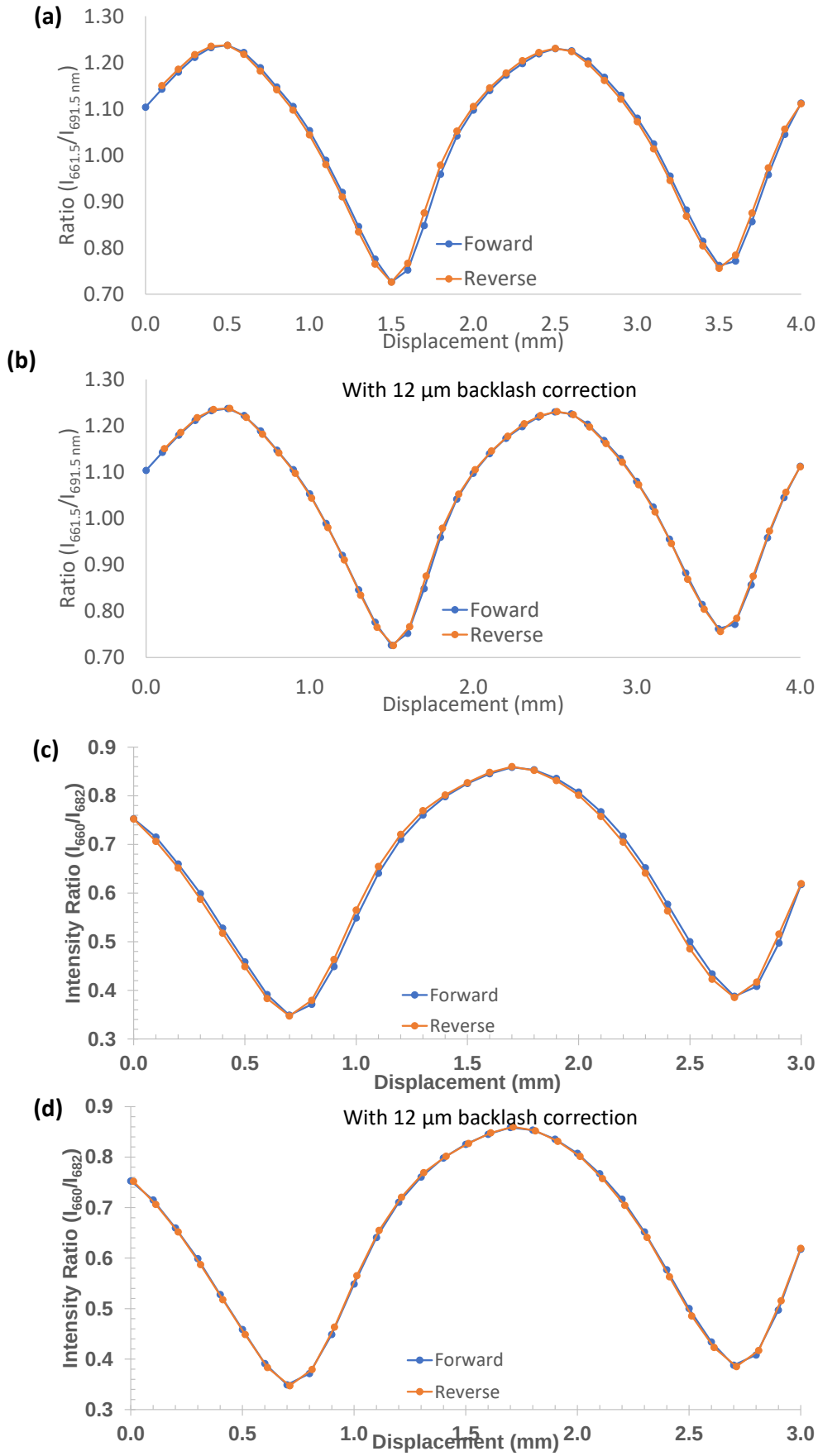

Figure S1. Spectral intensity ratio acquired using a 150 line/mm diffraction grating vs. displacement **(a)** without backlash correction and **(b)** with a 12 µm backlash correction. Spectral intensity ratio acquired using a 1200 lines/mm diffraction grating vs. displacement **(c)** without backlash correction and **(d)** with a 12 µm backlash correction.

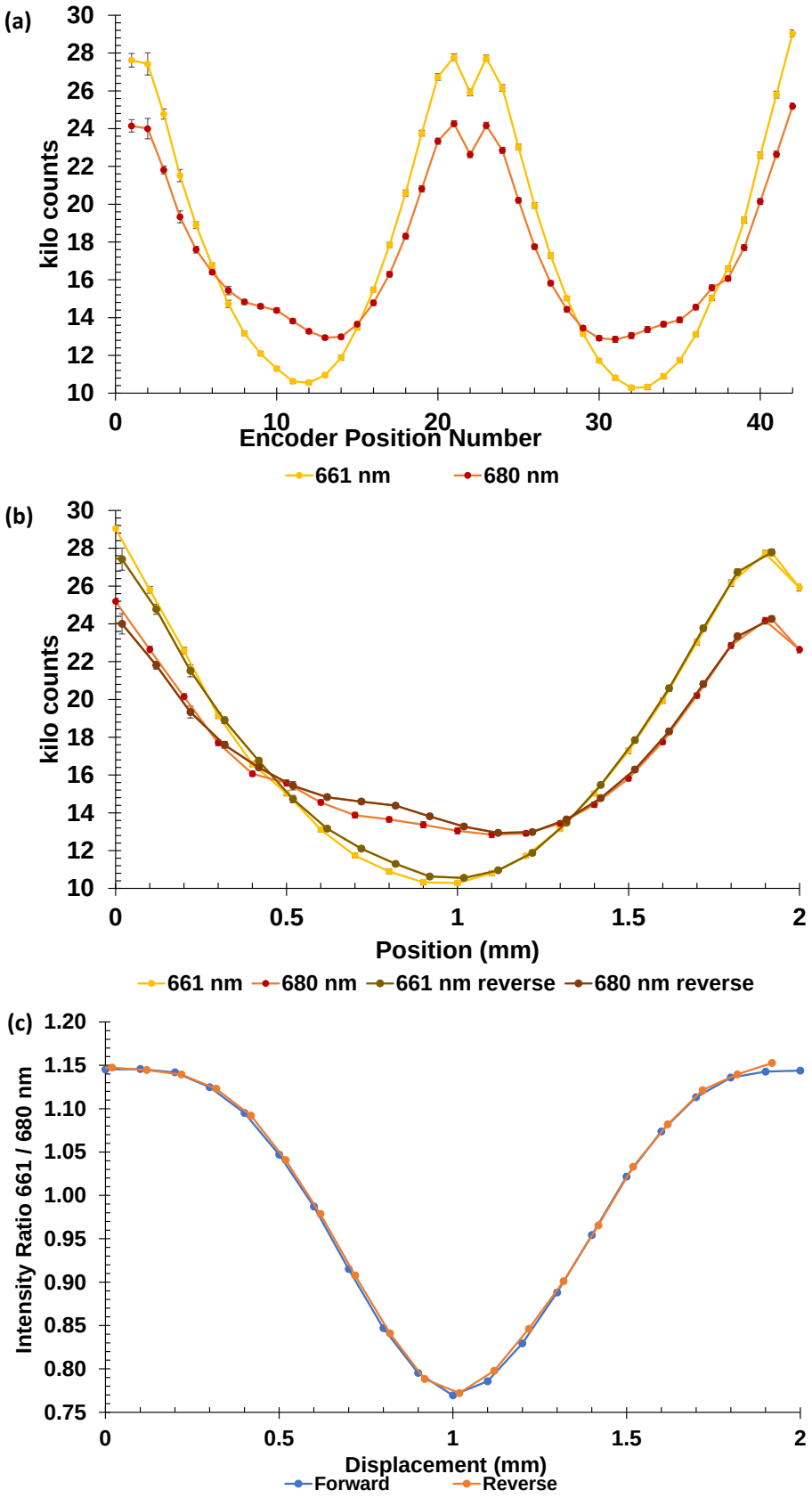

Figure S2. Displacement measurements through 6 mm chicken breast tissue. **(a)** Raw intensities at 661 nm and 680 nm, same data as Figure 5c. **(b)** Replotted as intensity vs. position. **(c)** Calculated Intensity ratio (also shown in Figure 6c).

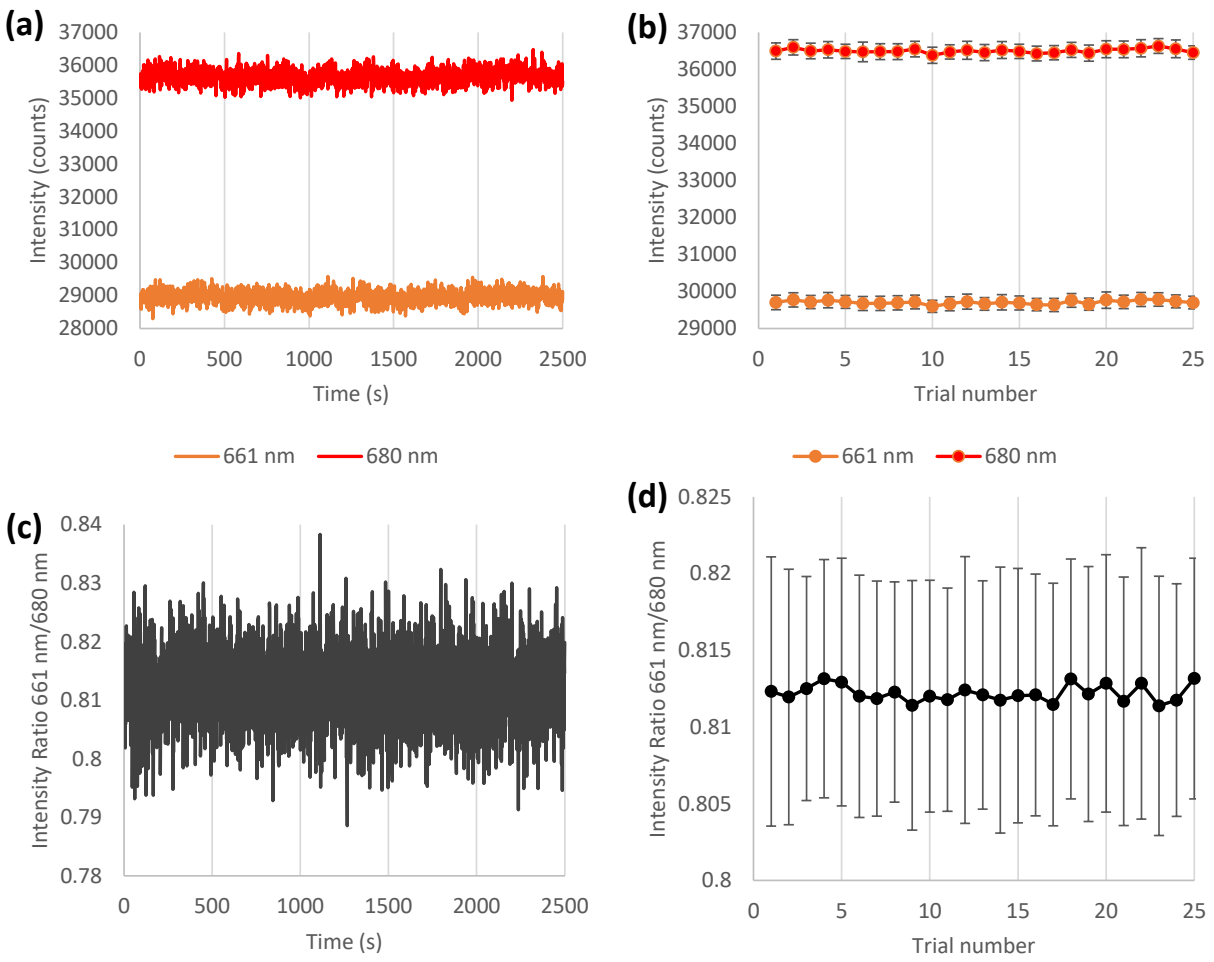

Figure S3. Spectral ruler measurements through 6 mm of chicken tissue, used to generate Figure 5d. **(a)** Intensity at 661 nm and 680 nm (1 s exposure for each measurement). **(b)** Intensity at 661 nm and 680 nm for averaging 100 measurements. **(c)** Ratio of 661 nm/680 nm intensities (1 s exposure for each measurement). **(d)** Ratio of 661 nm/680 nm intensities for averaging 100 measurements.