

Tissue Mimicking Materials for Thin Film Phantom

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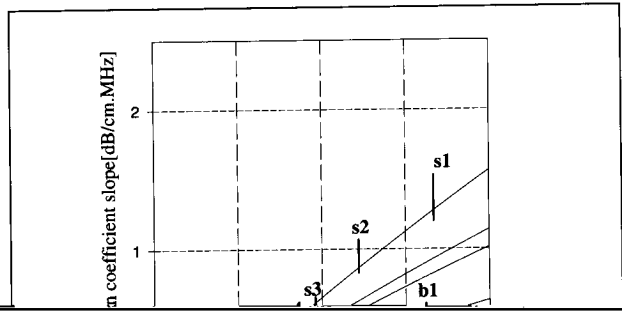
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Summary

A systematic approach is proposed for developing tissue mimicking materials. Speed of sound and the attenua-

the water-sample interface perpendicular to the ultrasonic beam, the holder was mounted on an optical jig and care was taken to ensure that the Saran Wrap interface was perpendicular to the beam. All the measurements were done at the temperature of $21 \pm 2^\circ\text{C}$. The errors in measuring the speed of sound and the attenuation slope, mainly from the error in thickness and density of the sample, were estimated from reproducibility measurement to be ± 2 m/s and ± 0.15 dB/cm respectively.



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Table 2. Comparison of mechanical properties between the skin and the soft tissue mimicking materials.

Material	Young's Modulus (kPa)	Tensile Strength (MPa)	Elongation at Break (%)
Human skin	~100	~20	~1500
Soft tissue mimicking materials	~100	~20	~1500

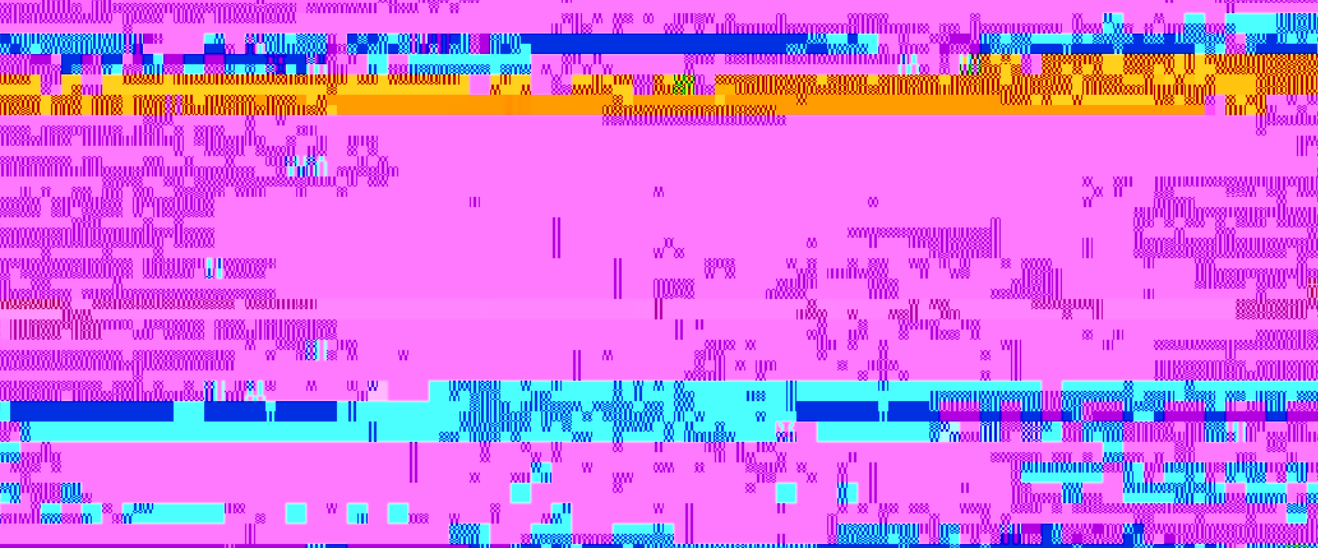


Figure 3. Comparison of stress-strain curves between skin and soft tissue mimicking materials.



Figure 4. Comparison of the average stress-strain curves between skin and soft tissue mimicking materials.

Young's modulus and tensile strength were 100 kPa and 20 MPa, respectively. The elongation at break was 1500%. The mechanical properties of the skin and the soft tissue mimicking materials were compared, and the results are shown in Table 2. The mechanical properties of the skin and the soft tissue mimicking materials were compared, and the results are shown in Table 2.

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