

**QIBA Ultrasound Shear Wave Speed (SWS)  
Phantom-System Measurement Testing**  
Monday, September 24, 2012; 1 PM CT  
Draft Call Summary

**In attendance**

**Brian Garra, MD (Co-Chair)**

**Timothy J. Hall, PhD (Co-Chair)**

Paul L. Carson, PhD

Shigao Chen, PhD

David Cosgrove, MD

Steven E. Fick, PhD

Ted Lynch, PhD

Andrew Milkowski, MS

Nicolas Rognin, MSc, PhD

Cedric Schmitt, PhD

Daniel C. Sullivan, MD

Keith Wear, PhD

Hua Xie, PhD

**RSNA**

Joe Koudelik

Julie Lisiecki

**Approval of last call summary, 8/27/2012**

**Continued Discussion of Measurement Methods for Viscoelastic Materials (Dr. Hall)**

- Custom (non-commercial) instrument properties described for determining the complex shear modulus
- Establishing conformance of measurement results to Kramers-Kronig relations (relating real to imaginary components of the complex modulus) is essential for measurements to be considered 'reliable'
- Frequency range of UW shear apparatus extends from 10-300 Hz, and this is considered adequate for initial tests.
- No reference standards exist yet, making it difficult to claim accuracy in complex shear modulus measurements
- Two measurement techniques are needed for corroboration
  - Evidence of equivalent results in overlapping frequency range
  - Corroboration between UW shear apparatus (10-300Hz) and Rheolution device (200-1000 Hz) will increase confidence in establishing material properties over that range.
- Rod Lakes' method (torsional measurement) requires conformance of Kramers-Kronig relation.
  - His system has demonstrated consistent results for a frequency range extending over 13 orders of magnitude
  - Rod stated willingness to make material measurements for us, but will require compensation for his time and needs to be scheduled months in advance
- **Phantom Materials Discussion: [Tissue Simulation and Phantom Technology](#) (Dr. Lynch)**
- Discussion of Zerdine properties and emulsions made to mimic fatty tissues
- Emulsions made in cooperation with Dr. Shigao Chen at Mayo Clinic
- CIRS elastic measurements show satisfactory agreement to shear wave speed
- Further discussion on next call to include any additional materials and properties

**Next steps:**

- For the next t-con, Dr. Lynch will continue the discussion of Zerdine characteristics and the group will consider other suitable materials.

**Next call for QIBA US SWS Phantom-System Measurement Testing Subcommittee:**

- **Monday, November 5, 2012 at 1 pm CT.**
- **There will be no call for the QIBA US SWS Phantom-System Measurement Testing Subcommittee in October due to holiday and travel conflicts.**

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