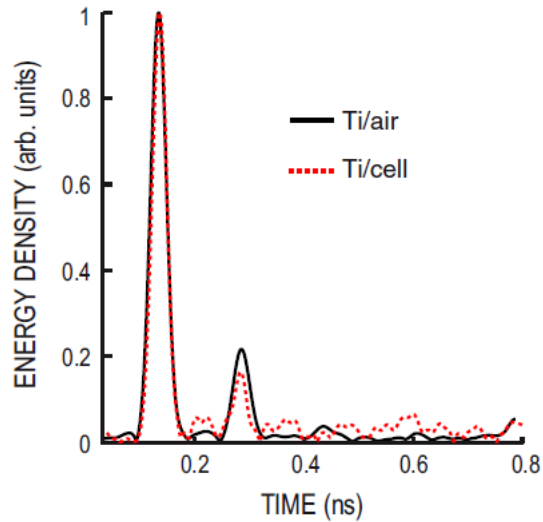


1. Nanoacoustic cell characterization

Dehoux *et al.*, Ultrasonics 2015, showed a measurement of a cell on a titanium substrate. Calculate the dynamic elastic modulus of the cell (frequency used was 50 GHz).



2. Nanoscale thermal expansion

Derive the expression for the thermal stress generated during a femtosecond laser excitation assuming an isotropic material. What can you say about the stress?

3. Phonons in bone

Read the paper by Davies *et al.*, Scientific Reports 2014 (DOI: 10.1038/srep07538) and describe the main results and conclusions.

4. Modes of nanoacoustic excitation

Describe the 4 (5?) modes of excitation and the most important parameters (material/optical) for each mode.