

Preliminary Brillouin measurements of a cow's liver

1. Context and conclusion. The goal of this test was to verify the suitability of the LM Brillouin system to measure the Brillouin signal of opaque biological tissues. The test confirmed that such measurement can be successfully achieved rather straightforwardly.

2. Experimental details:

Spectrometer	HF-8999-PK-532 (SN94815)
Brillouin microscope	HF-9000 (SN97021)
FWHM spectral resolution	0.47 GHz
Repeatability (precision) of Brillouin shift	<10 MHz is typical (e.g.: target with water, 10 mW, 660 nm, ~70 ms)
Pump suppression	~65 dB
Overall effective contrast	~110 dB
Microscope objective	Slightly underfilled 20X, 0.45 NA
Spatial resolution (lateral)	~1 μm
Excitation wavelength	532 nm (Cobolt laser)
Power at sample	~6 or ~15 mW, as specified in the figures
Exposure time	250 ms (5 avgs) or 2000 ms (1 average), as specified in the figures

3. Results:

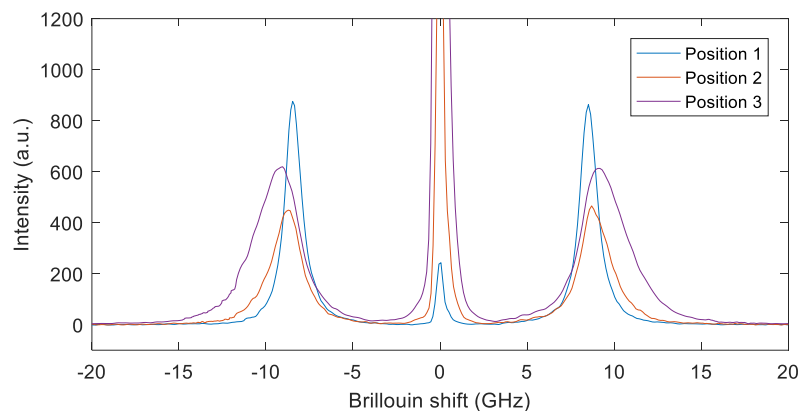


Figure 1. Left: Picture of the sample “mounted” on a glass slide. Right: Examples of liver signals; the 3 spectra correspond to 3 different positions in the sample. Most positions measured were similar to the blue curve. [~15 mW, 250 ms (5 avgs)].

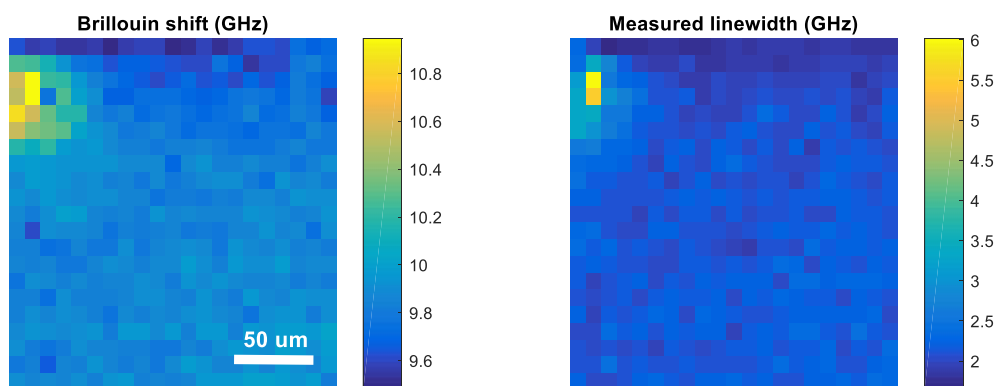


Figure 2. Left: Brillouin map of a presumably representative area: we can see the Brillouin shift is mostly constant across most of the area, except for a small region that appears stiffer. [~6 mW, 2000 ms (no avg)].