## 2013

## Ultrasonic Backscatter Coefficient Estimates in a Soft Tissue Mimicking Phantom

## Nesrine HOUHAT, Tarek Boutkedjirt

**Abstract :** The ultimate goal of characterization methodsbased on the backscatter coefficient (BSC) estimates isto obtain structural information about samples independently of the measurement system. In the current study, measurements of the BSC were obtained from TissueMimicking Materials (TMM) or phantoms. These consisted of a mixture of gelatin and distilled water containingmicroscopic graphite particles with a mean radius of 18micrometers, which were randomly distributed. Phantomsconcentrations ranged from 50 to 200 g of graphite per literof gelatin. Two BSC estimation methods were used andtheir results were compared to Faran's scattering theorywhich allowed the estimation of the number density of graphite particles in the phantoms. Moreover, measurements of the attenuation coefficient and the BSC as afunction of frequency and scatterers's concentration in afrequency range from 1.5 MHz to 6 MHz will be presented using two transducers of nominal frequencies 2.25 MHzand 5 MHz. Decreasing of the attenuation coefficient with frequency and graphite concentration will be showed.

Keywords : Ultrasound, Attenuation, backscattering, TMM