

# **CHARACTERIZATION OF COMPOSITE MATERIALS BY WAVE-MATTER INTERACTIONS**

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The goal of this study is to investigate wave response of a two-phase system consisting of liquid-solid mixture at different scales. To detect defects in the composite materials, and to determine the similarities in wave-matter interactions at macro and nano-scales. The solid-liquid aggregates of the uniform -size glass spheres forms the model media. The wave response of the model, as a function of the dimensionless quantity,  $\mathbf{kr}$ , (wave number x particle size), gives the wave response independent of scale. Band-pass filter, dispersion, and wave attenuation data measured in this study could predict structural parameters such as; grain size, elastic moduli, index of refraction, and absorption spectra of composite materials.