

Stimulated Brillouin Microscopy for the Life Sciences

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For decades, stimulated Brillouin scattering (SBS) has been used to evaluate the acoustic phonon properties of materials via pointwise spectroscopic measurements of Brillouin peak gains, Brillouin frequency shifts, and Brillouin linewidths. In this talk, I will present the evolution of SBS spectroscopy to three-dimensional, high optical and spectral resolution microscopy for the life sciences through advances in detection sensitivity and specificity. I will describe the ability of continuous wave stimulated Brillouin microscopy to selectively excite phonons in living systems, opening new possibilities for rapid bioimaging applications, as well as to distinguish between different materials at biological interfaces, enhancing the quantitative analysis of Brillouin measurements in biological settings. Finally, I will overview recent advances in pulsed stimulated Brillouin microscopy that enable lower photodamage and faster Brillouin measurements.



Short Bio:

Alberto Bilenca received his PhD degree in Electrical Engineering from the Technion, Israel in 2005. During 2005-2008, he conducted postdoctoral research as a Marie Curie fellow in the Wellman center for photomedicine, USA and the EPFL, Switzerland. He is currently an associate professor of biomedical engineering in Ben-Gurion University of the Negev, Israel.