

Small CaF₂ Nanocrystals as Nano-sized Tracers for *In vivo* ¹⁹F-MRI

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In this study we present a novel class of ¹⁹F-nanoformulations based on small (<10 nm) fluoride-nanocrystals (specifically CaF₂ nanofluorides) for MRI applications. We show that homonuclear dipolar interactions can be averaged out by the fast tumbling of the PEG-coated nanocrystals thus enabling the acquisition of high-resolution ¹⁹F-NMR. Using this feature, we demonstrate that our newly developed nanofluorides could be used as ¹⁹F-MRI tracers and present a “hot-spot” mapping in an animal model inflammation. The proposed nanofluorides combine the advantages of using nanocrystals (small, high ¹⁹F-equivalency, maximal ¹⁹F-density, and surface modifiability) with the merits of ¹⁹F-MRI tracers.

Biography:

Dr. Idan Ashur has completed his PhD at 2006 from The Weizmann Institute of Science and postdoctoral studies from Arizona State University. He served as researcher the Technion, Israel Institute of Technology and as a senior intern with the Weizmann Institute of Science. During that period, he was engaged in the development of new tools for *in-vivo* MRI under the supervision of Dr. Amnon Bar-Shir. He is now working as a senior researcher in the Department of Physics at the Bar-Ilan University at Ramat-Gan, Israel. His research involves the study and development nanosensors in brain research under the supervision of Prof. Shimon Weiss.