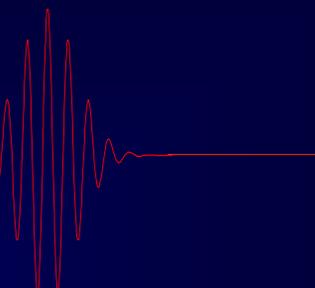




Biomaterials Laboratory

Martinos Center for Biomedical Imaging
Massachusetts General Hospital and Harvard Medical School

Group Leader: Jerry Ackerman



Mission

The Biomaterials Laboratory develops methods to study natural and synthetic biomaterials using magnetic resonance imaging and spectroscopy.

- Bone mineral
- Pathological calcification (atherosclerosis)
- Synthetic calcium phosphate ceramic implants
- Polymeric implants
- Composite implants
- Intravascular RF coils



Investigators and MGH Collaborators

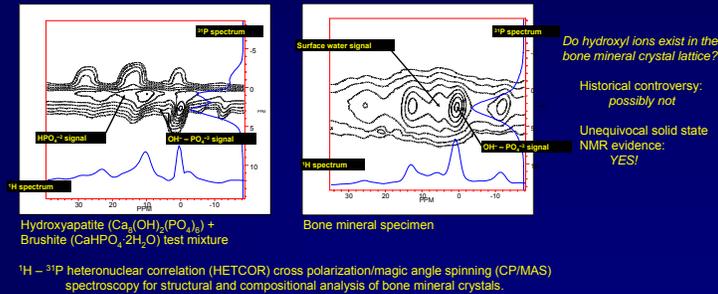
- Christian T. Farrar, Ph.D.
- Gyunggoo Cho, Ph.D. (Present address: Seoul National University Hospital)
- Van J. Wedeen, M.D.
- Denise P. Hinton, Ph.D.
- David A. Chesler, Ph.D.
- Janelle Chang, Dartmouth College

Children's Hospital Collaborators

Laboratory for the Study of Skeletal Disorders and Rehabilitation

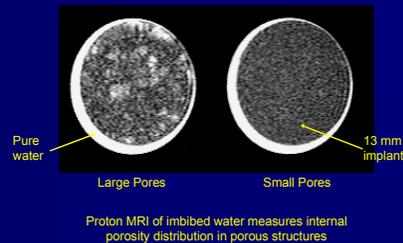
- Melvin J. Glimcher, M.D.
- Yaotang Wu, Ph.D.
- Lila Graham, Ph.D.
- Jinxi Wang, M.D., Ph.D.

Two Dimensional Solid State NMR Spectroscopy of Bone Mineral

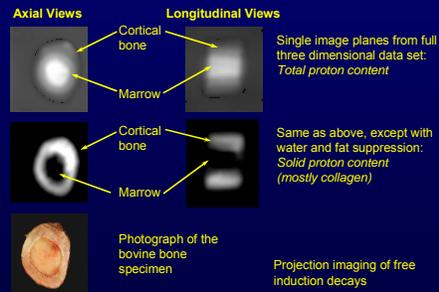


Cho, Wu, Ackerman. *Detection of hydroxyl ions in bone mineral by solid-state NMR spectroscopy.* *Science.* 2003; 300: 1123-1127.

Porous β -Tricalcium Phosphate Implant Porosity

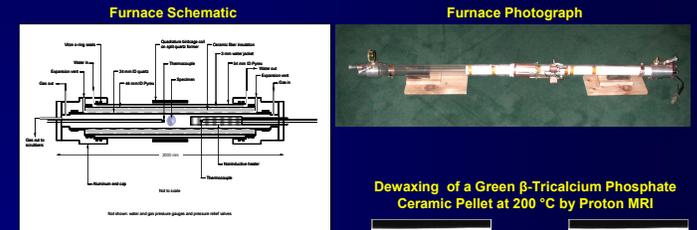


^1H Solid State MRI of Bone Matrix

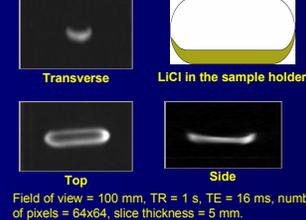


Wu, Ackerman, Chesler, Graham, Wang, Glimcher. *Density of organic matrix of native mineralized bone measured by water and fat suppressed proton projection MRI.* *Magn Reson Med.* 2003; 50: 59-68.

MR Compatible Furnace for In-Situ MRI of High Temperature Materials Processing

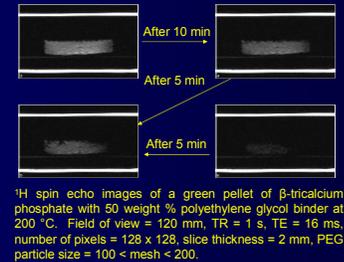


^7Li Spin Echo Images of Molten LiCl at 700 °C

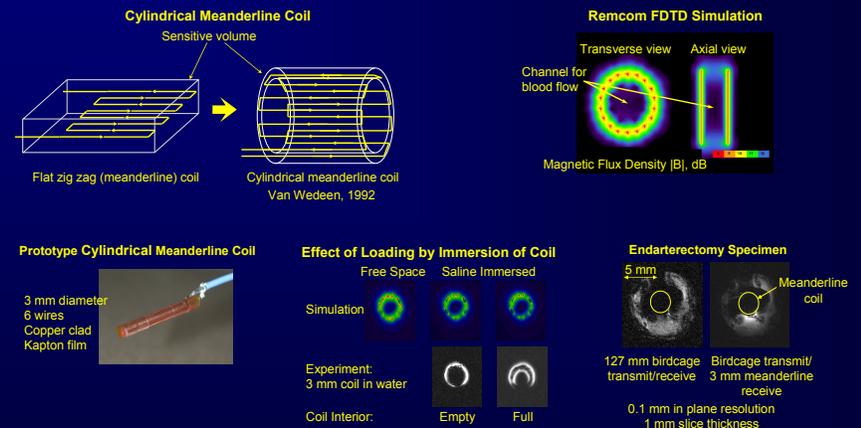


Cho G, Segal E, Ackerman JL. *Nuclear magnetic resonance-compatible furnace for high temperature MR imaging and spectroscopy in situ.* *J Magn Reson.* 2004; 169: 328-334.

Dewaxing of a Green β -Tricalcium Phosphate Ceramic Pellet at 200 °C by Proton MRI



Intravascular RF Coils



Farrar CT, Wedeen VJ, Ackerman JL. *The cylindrical meanderline radio frequency coil for intravascular magnetic resonance studies of atherosclerotic plaque.* *Magn Reson Med.* In press.