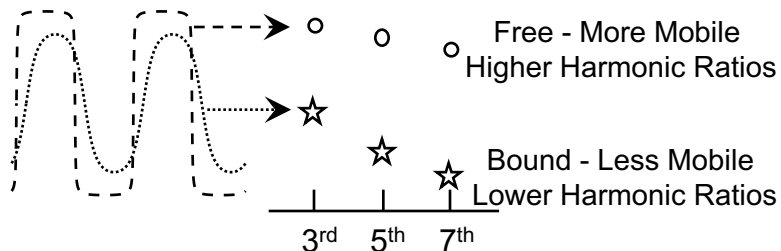


Characterizing Thrombus Age and Molecular Organization Using Magnetic Nanoparticle Spectroscopy

J. Weaver, H. Khurshid, Y. Shi, B. Berwin, D. Scharz, B. Friedman, W. Wells, C. Eskey

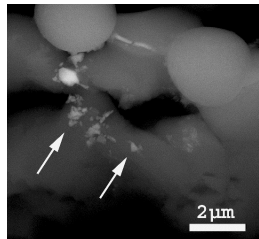
Magnetic nanoparticle spectroscopy was used to remotely measure:

- 1) number of nanoparticles bound to clots and
- 2) nanoparticle bound state.



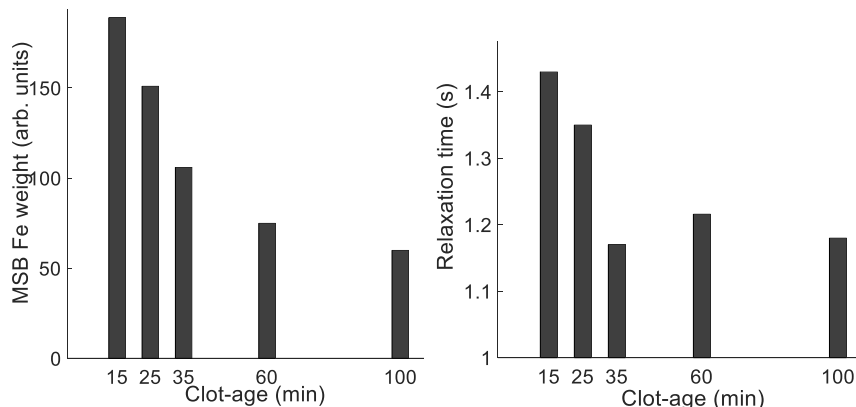
Magnetization produced by magnetic nanoparticles in an alternating magnetic field.

SEM of clot shows bound nanoparticles.



New clots have poor molecular organization and are less mechanically stable.

New clots a) bound more nanoparticles and b) bound them more tightly.



Weight of nanoparticles bound to clot drops with clot age

Relaxation time of nanoparticles bound to clot drops with clot age

We are developing this technology to characterize clots and inform mechanical clot extraction.