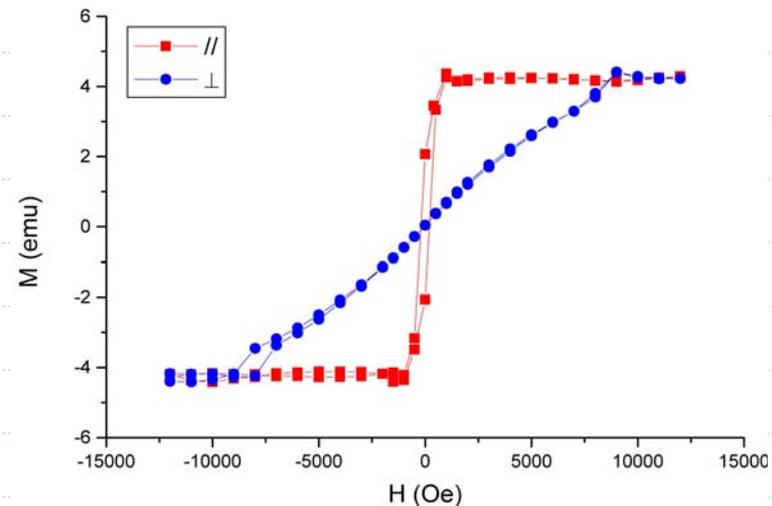
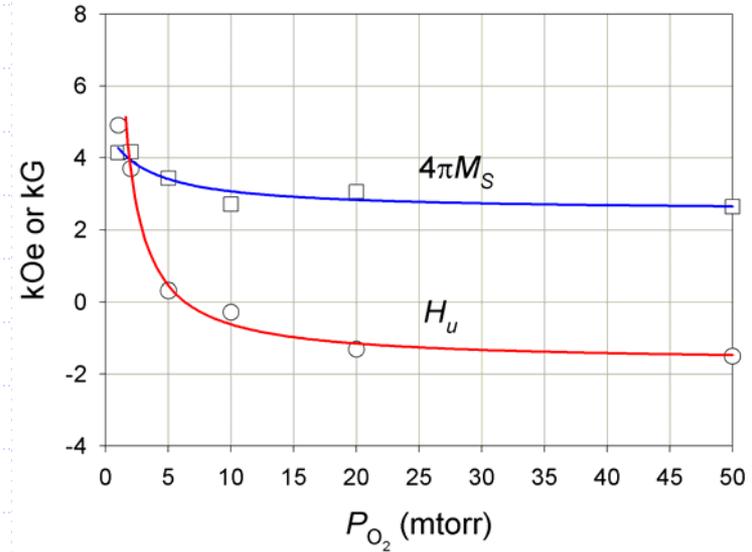


# Ceramic Artificial Ferrites Prepared by Laser Ablation

**Prof. Carmine Vittoria, Northeastern University, DMR-0226544**

Artificial manganese ferrite ( $\text{MnFe}_2\text{O}_4$ ) films were deposited by a new deposition technique, in which oxide layers of  $\text{MnO}$  and  $\text{Fe}_2\text{O}_3$  were deposited at the atomic scale. The advantage of this technique is that it allows for the possibility of increasing saturation magnetization beyond what is now available commercially. In addition, it allows for internal field bias, referred to as magnetic anisotropy field, to be significantly bigger than any present cubic ferrites available commercially. This means that future microwave devices developed for wireless communication systems, computer networks and electronic systems, can be self-biased and more efficient, implying lower power consumption and smaller size than present devices.



# Education and Outreach

**Prof. Carmine Vittoria, Northeastern University, DMR-0226544**

1. Mr. Xu Zuo worked for this project as a graduate student. He worked on both theoretical and experimental aspects of the project, including the calculation of exchange constants, deposition and characterization of films.
2. Mr. Tristan Brawn worked for this project as an undergraduate students
3. Dr. Bernardo Barbiellini of Physics Department was involved with us on the computational aspect of the project.
4. We are one of the participating laboratory in which teachers at the high school can work in a laboratory like ours in the summer. The funding is derived from NSF and the program is administrated by Clare Duggan of the CER (Center for electromagnetic research).

