

## The MRX II™ Has Landed

Houston, we've arrived!

*"After all the last minute details, an MRX II system is now at MD Anderson. It was a terrific team effort from mechanical, software, and electronics engineering, laced with the physics, biology and chemistry that brings it alive. We are excited to see all that MD Anderson will be able to do with the help of this entirely new type of measurement."*

*- Gerald Grafe, President*

### The MRX II is up and running at MD Anderson!

At the heart of the instrument are the multiple SQUID detectors working together to detect a signal from the bound nanoparticles in a sample. Based on the first generation system created by Ed Flynn himself, the MRX II instrument includes new hardware and electronics to provide even better performance and serviceability in the field. The system now in operation at MD Anderson includes computer controlled mechanical stage movements, precisely milled platforms for sample positioning, and an integrated the optical imaging capability, not to mention a professional exterior to match the high quality performance.



ED FLYNN, PHD, INVENTOR OF THE TECHNOLOGY, WITH MRX II THE DAY BEFORE IT LEFT FOR MDA.

Senior Scientific is dedicated to early detection, mapping and quantification of cancer and other human diseases. Our proprietary technologies and methods employ magnetic nanoparticles targeted towards cells associated with cancer and other diseases and provide the ability to detect these cells through highly sophisticated magnetic sensors.

## Sensitivity means Early Detection: It's all about Signal to Noise Ratio.

MRX technology uses ultra-sensitive superconducting quantum interference detectors at a super-cooled temperature to detect small changes in magnetism from PrecisionMRX nanoparticles. But detecting the signal is only half the battle.

What makes us unable to see the stars during the day? The stars are emitting light, but when bathed in a sea of light, we can't see them. Likewise, most medical detection methods are plagued with background noise that drowns out the signal we want to measure.

In the MRX II system the signal is highly specific to the nanoparticles, so the background is virtually non-existent. This makes the signal stand out like a beacon at night. This is the promise of MRX technology: to detect smaller groups of specific cells with better sensitivity than anyone currently imagines possible.

MD Anderson, and other partners, will open up new preclinical and clinical applications and will help pave the way for widespread adoption. MD Anderson is the first team outside of New Mexico to have the MRX II instrument and the PrecisionMRX nanoparticles – and we are excited about what this unprecedented sensitivity will mean for their research.



### Team Profile: Focus on Physics

Todor Karaulanov came into Senior Scientific to take over the physics of the MRX Instrument. Todor is from Bulgaria where he earned his PhD. He came to the U.S. to do post-doctoral studies at UC Berkeley and then, at Los Alamos National Laboratory, where he focused on using atomic magnetometry for biomedical applications. He is an expert in atomic physics and rivals Ed Flynn in his use of letters to do math! He has one little daughter and another one on the way!

#### MRX II – PART OF A NEW PARADIGM IN DETECTING OVARIAN CANCER



The American Cancer Society estimates that in 2014, about 21,980 new cases of ovarian cancer will be diagnosed and 14,270 women will die of ovarian cancer in the United States.

**Dr. John Hazle of MD Anderson expressed his appreciation of the MRX Technology with the following statement:**

***“This is a truly exciting new technology. With the system now located in our lab, our goal is to fully exploit the capabilities and push the limits of detectability. We are starting this scientific journey with ovarian cancer where early detection continues to limit our ability to effectively treat this disease. With new risk indicators, some developed right here at M.D. Anderson, we hope to include MRX in a new paradigm of early detection for ovarian and other cancers.”***