## JAREK WOSIK

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**Education:**

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|---|---|---|
| M.S. | University of Warsaw, Physics Department, Solid State Physics | 1971 |
| Ph.D. | Institute of Physics, Polish Academy of Sciences, Warsaw, Poland | 1986 |

**Employment History**:

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|---|---|
| 1971-1973 | Process Engineer, Research and Development Center for Semiconductors, Warsaw, Poland |
| 1973-1976 | Research Scientist, Institute of Electron Technology, Warsaw, Poland |
| 1976-2001 | Scientist, Senior Scientist at the Inst. of Electronic Materials Technology Warsaw, Poland |
| 1990-1997 | Research Assistant Professor of ECE, University of Houston |
| 1997-2003 | Research Associate Professor of ECE, University of Houston |
| 2003-present | Research Professor of ECE and Texas Center for Superconductivity, UH |
| 2003-2005 | Research Scientist (adjunct), Texas Heart Institute |

**Recent Research Highlights:**

- Experimental demonstration of enhanced *rf* heating of non-magnetic nanoparticles (NPs) due to adsorption of proteins; interface loss governed rf EM interaction with NPs
- Very high resolution (3D isotropic 34 micron resolution demonstrated) magnetic resonance imaging (MRI) cryo-probes built for 7 Tesla imaging of small animals
- Exposure of macrophages to a magnetic filed/gradient leads to actin cytoskeleton changes, which ***are strikingly similar to changes induced by RhoA pathway interference*** (local application of a magnetic field/gradient to the transplanted organs could prevent macrophage movement and inhibit development of chronic rejection).

**Lab Facilities / Expertise:**

- Custom-built permittivity and impedance measurements stations (micro-electrodes integrated with microfluidic) for *in vitro* samples. Fiber-optic oxygen/temperature and non-contact impedance
- Custom-built ac/rf setups for *in vitro* measurements of samples temperature under applied electromagnetic radiation (0-150 MHz, up to 300 W input power),
- HP 8720C Vector Network Analyzer (50 MHz – 20 GHz), HP 83640A Synthesized Sweeper (10 MHz – 40 GHz), HP 8757E Scalar Network Analyzer (10 MHz – 40 GHz), HP 4195A

**Five Selected Publications:**

- Xie L, **Wosik J**, Wolfe JC, Nonlinear microwave absorption in weak-link Josephson junctions, Phys. Rev. B 54, 15494–15499 (1996). PMID: 9985618.
- **Wosik J**, Xie L, Strikovski M, Przyslupski P, Kamel M, Srinivasu VV, and Long SA, Characterization of ferromagnetic perovskites for magnetically tunable microwave superconducting resonators, J. Appl. Phys. 91, 5384 (2002) (7 pp) doi:10.1063/1.1459600.
- **Wosik J**, Xue L, Xie L-M, Kamel M, Nesteruk K, Bankson JA. Superconducting array for high-field magnetic resonance imaging *Appl. Phys. Lett*.; 91:183503, 2007. doi:10.1063/1.2801384.
- Divya Padmaraj D, Pande R, Miller Jr. JH, **Wosik J**, Zagozdzon-Wosik W, "Mitochondrial membrane studies using impedance spectroscopy," PlosOne, 9. 7. e101793, 2014.
- **Wosik J**, Krupka J, Ketharnath D, Qin K, Galstyan E, Selvamanickam V, "Microwave characterization of normal and superconducting states of MOCVD made YBCO tapes," Superconductor Science and Technology, 30, (3), 2017.