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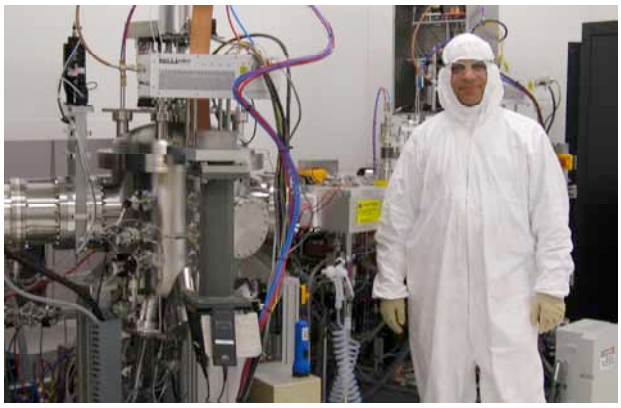
Research Summary:
Research interest and expertise include the production of Nb and Pb superconducting films, the synthesis of high quality single crystals of the high temperature superconductor YBa2Cu3O7-d with flux method using a Lindberg/Blue box furnace, the preparation of ultra-high purity and impurity doped NbSe2 single crystals with the vapor transport method using a three-zone furnace to study the effect of magnetic impurities on the vortex lattice properties, and the development of synthesis process for single crystals of the newly discovered graphite intercalation superconductors CaC6, YbC6, and SrC6.



My responsibilities at the CNM include the operation, maintenance, and upgrade of UHV oxide MBE, sputtering and e-beam deposition systems and the design and development of high-quality experimental techniques to synthesize and characterize nanoscale materials, participating in collaborative research with users and CNM principal investigators. I also provide training and cooperate with users on the fabrication of films and devices requiring the Kurt Lesker Physical Vapor Deposition System Sputter & Evaporation tool, of which I am the custodian.

Selected Recent Publications:
Soft Magnetic Lithography and Giant Magnetoresistance in Superconducting / Ferromagnetic Hybrids, V. K. Vlasko-Vlasov, U. Welp, A. Imre, D. Rosenmann, J. Pearson, and W. -K. Kwok, Phys. Rev. B**78**, 1 (2008)

Effect of Magnetic Impurities on the Vortex Lattice Properties in NbSe2 Single Crystals, M. Iavarone, R. Di Capua, G. Karapetrov, A. E. Koshelev, D. Rosenmann, H. Claus, C. D. Malliakas, M. G. Kanatzidis, T. Nishizaki, N. Kobayashi, Phys. Rev. B**78**, 174518 (2008)

Guiding Superconducting Vortices by Magnetic Domain Walls, V.Vlasko-Vlasov, U.Welp, G.Karapetrov, V.Novosad, D. Rosenmann, M. Iavarone, A. Belkin, W. -K. Kwok, Phys. Rev. B**77**, 134518 (2008), Featured in American Physical Society's *Physical Review Focus: Magnet Controls a Superconductor* (April, 2008)