

HELICIO RANGEL BARRETO ORLANDE, PHD was born in Rio de Janeiro on March 9, 1965. He obtained his B.S. in Mechanical Engineering from the Federal University of Rio de Janeiro (UFRJ) in 1987 and his M.S. in Mechanical Engineering from the same University in 1989. After obtaining his Ph.D. in Mechanical Engineering in 1993 from North Carolina State University, he joined the Department of Mechanical Engineering at UFRJ, where he was the department head during 2006 and 2007. His research areas of interest include the solution of inverse heat and mass transfer problems, as well as the use of numerical, analytical and hybrid numerical-analytical methods of solution of direct heat and mass transfer problems. He is the co-author of 4 books and more than 370 papers in major journals and conferences. He is a member of the Scientific Council of the International Centre for Heat and Mass Transfer and a Delegate in the Assembly for International Heat Transfer Conferences. He serves in the Editorial Boards of the journals Heat Transfer Engineering, High Temperatures - High Pressures and International Journal of Thermal Sciences.



DR. HELCIO RANGEL BARRETO ORLANDE

Professor

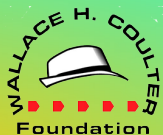
Federal University of Rio de Janeiro

THERMAL TREATMENT OF CANCER

ABSTRACT: Although the use of heat in medicine dates back from remote centuries, recent advances in nanotechnology raised great interest on the thermal treatment of cancer. In this particular application, nanoparticles located in the tumor improve the local absorption of energy from an external and non-intrusive source, thus selectively increasing the temperature of tumor cells and reducing thermal damage to healthy cells. The use of heat for the treatment of cancer can be aimed at: (i) A mild temperature increase of the tumor, in order to make their cells more susceptible to the

effects of other treatments, like radiotherapy or chemotherapy; or (ii) A large temperature increase of the tumor to kill their cells solely by the effects of heat. Within the medical community, these treatments are usually referred to as hyperthermia and thermal ablation, respectively. In this talk we summarize our recent developments involving the thermal treatment of cancer, specifically on the development of nanoparticles, indirect temperature measurements, model selection/calibration and optimal design under uncertainties of hyperthermia and thermal ablation.

FRIDAY, SEPTEMBER 3 / 9:00 AM



Through the generous support of the Wallace H. Coulter Foundation, the Department of Biomedical Engineering facilitates weekly lectures each year during academic terms. Experts in all areas of Biomedical Engineering are invited to provide a research seminar and to meet with faculty and students to discuss the latest developments and research in Biomedical Engineering.

Friday, September 3, 2021

9:00AM-10:00AM | <https://bme.fiu.edu/seminars>