

UT Southwestern Medical Center
Advanced Imaging
Research Center

Head of RF laboratory

The Advanced Imaging Research Center (AIRC) at the UT Southwestern Medical Center in Dallas / Texas / US invites applications for a research faculty position in RF engineering as **Head of RF laboratory (open rank)**. The aim is to fully develop 3T MRI under hyperpolarized substrate and labelled isotope infusion and ≥ 7 T human proton and non-proton MRI for brain, body and musculoskeletal applications at UTSW. In addition, research programs in rodent MRI including the development of contrast agents and integrating HIFU setups as well as human projects with respect to interventional radiology, PET-MR and MR-LINAC shall be supported.

Potential topics include, but are not limited to novel ^1H transmit and receive array coil designs for human head and body applications utilizing a parallel transmission system at ultra-high field, dual tuned coil arrays for human brain, body and extremity application at 3T and UHF ($^{13}\text{C}/^1\text{H}$; $^{31}\text{P}/^1\text{H}$; $^{23}\text{Na}/^1\text{H}$; $^2\text{D}/^1\text{H}$; $^{39}\text{K}/^1\text{H}$), integration of RF coils with B_0 shim setups or HIFU devices, PET compatible RF coils, optimization of array elements, array element distribution and decoupling strategies by analytical and numerical modelling.

Since its creation in 2005, the AIRC has established a track record of excellence in metabolic imaging including the development of MRI contrast agents, a hyperpolarization program, magnetic resonance spectroscopy as well as the investigation of tissue extracts by NMR after ^{13}C labelled isotope infusion. Due to the recent establishment of the O'Donnell Brain Institute at UTSW and to better support an active clinical and basic science neuroimaging community at UTSW, UTD and UTA we aim to develop a strong MRI neuroimaging methodology expertise to complement the existing focus. UTSW has an international reputation in clinical and basic science excellence. There have been six Nobel Prize recipients since 1985.

AIRC has provided access to imaging equipment for faculty and students at the three University of Texas academic institutions in north Texas to advance human imaging studies and translational research in animals. The AIRC currently consists of 10 core faculty and more than 20 adjunct faculty and is expanded by about 5 core faculty in near future. AIRC is equipped with three small animal MR scanners (4.7T, 7T, 9.4T), three human research-only 3T MR scanners (Philips Ingenia, Siemens Prisma, GE 750w), one human 7T MR scanner (Philips), two hyperpolarization setups (HyperSense for preclinical and SpinLab for human application), 7 NMR spectrometers and a MRI contrast agent chemistry lab. In the nearby Radiology Department, there is access to a cyclotron for producing radiotracers, small animal and human PET/CT and SPECT/CT scanners and to highly focused ultra-sound (HIFU) systems integrated with human and small animal MRI. The instrumentation inside the AIRC is undergoing a major upgrade that includes the installation of a parallel transmission system, a major upgrade of the spectrometer, receive channels and B_0 shimming hardware and extended multi-nuclear capability at the human 7T. The installation of a new generation UHF human MRI possibly > 7 T (AIRC), an integrated human PET-MRI system (Radiology) and an integrated MR-LINAC (Radiation Oncology) are foreseen in future.

Applicants for these positions should have a strong scientific record of accomplishment in radiofrequency engineering with a focus on novel and complex radiofrequency coil designs including transmit/receive arrays, dipole arrays and dual-tuned coils for human and animal applications, TR-switch design as well as splitter and connector box design. The qualification should be supported by respective publications, extramural funding and possibly patents/licensed technology. Applicants should have a degree in electrical engineering, physics, biomedical engineering or a related field. Experience in supervising graduate students and/or postdoctoral researchers is preferred. Experience in EM simulation and quality and safety testing of RF coils is of advantage. The candidate is expected to develop an innovative and internationally recognized research program and actively engage with clinical and basic research faculty across campus to apply the latest RF coil technologies to advance human and animal MRI.

The position is available immediately. The rank (Research Scientist; Assistant/Associate/Full Professor), is dependent on qualifications, previous experience and record of accomplishment of the candidate. The offer will include an attractive start-up package and a highly competitive salary. A fully equipped RF coil laboratory and a GPU server for EM simulation will be available.

UT Southwestern Medical Center is an Equal Opportunity/Affirmative Action Employer. Women, minorities, veterans and individuals with disabilities are encouraged to apply.

Applications should include a letter of interest, a curriculum vitae, a list of publications (peer-reviewed original articles; review articles; book chapters; conference contributions; patents; other), a list of grants (please clearly distinguish grants as PI, as Co-PI and as person funded by the grant); a list of supervised students (Bachelor, Master, PhD) and PostDocs; a comprehensive summary of past research experience and future mid and long term research interests (max 4 pages); PhD and Master certificates and respective transcripts; PDF copies of 5 most important publications and three references (contact details only).

All materials should be sent **electronically as a single PDF** file to Anke Henning, Director, Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, Texas, US: Anke.Henning@UTSouthwestern.edu.