

## **Position Overview**

Postdoctoral Position in Optics and Bio-engineering is available in the laboratory of Prof. Tomasz Tkaczyk in the Department of Bioengineering at Rice University. In our research we develop modern optical instruments for biological and biomedical applications. We combine new technologies in optics, opto-mechanics, electronics, software and bio-chemical materials to solve problems of medical diagnosis and detection for both clinical and remote environments. We are also interested in advancing imaging techniques to enhance performance and information content in acquired images.

We look for a postdoctoral fellow interested in optical design, fabrication, assembly and imaging with miniature optical systems. The researcher will work on design and building instruments combining high resolution imaging with bio-chemical contrast agents like gold nanoparticles or quantum dots to deliver information about the early stage of the disease (cancer, infectious diseases). To assure wide applicability of instruments they have to be inexpensive and easy to use. Examples of targeted systems include high resolution endoscopes, multiple FOV endoscopes and optical platforms for point-of-care (POC) applications. In-expensive optical platform can be applied for example for imaging and spectroscopy to enable efficient and easy screening.

As mentioned above a significant part of our research is based on high precision fabrication and assembly for integrated miniature instruments. Therefore, we are constantly searching for new fabrication/assembly techniques and new optical and opto-mechanical materials. Engaging in new technologies will be an important part of activities of a postdoctoral researcher. Modern technologies give us new capabilities not possible in more classical approaches. For example grayscale lithography with solgel allows us to easily build a new class of optical instruments (arbitrary surfaces) not restricted to rotational symmetry. At the same time it is a perfect technology for mass production using processing similar to that applied in electronics. Constant material advancements to enable building high power or color corrected miniature systems is always needed.

## **Responsibilities**

Responsibilities of the postdoctoral fellow will include:

- Very active engagement in the research on development of optical instrumentation pursued by group
- Publishing research papers
- Assistance with writing grant proposals
- Assistance in advising graduate students

## **Minimum Requirements**

- Ph.D. degree related to optical engineering, imaging or applied optics
- Optical design knowledge using commercial software packages (for example ZEMAX, Code V etc.)
- Experimental lab experience

## **About Rice and Houston**

Rice is constantly ranked as one of nation's best teaching and research universities. It is a member of world's largest medical center (Texas Medical Center). The Department of Bioengineering at Rice University is consistently among 10 best bioengineering graduate programs in US. Rice is situated next to the Texas Medical Center and in the Museum district of Houston.

Houston is the fourth largest city in US giving all benefits of a large metropolis. On the other hand living in Houston is affordable and delivers a lot of accessible choices for accommodation, entertainment or business.

## **Procedures**

Rice University is committed to affirmative action and equal opportunity employer and offers competitive postdoctoral salary and benefits. The position is opened from October 5th 2007 until filled. To apply please send your resume and letter on research interests directly to [ttkaczyk@rice.edu](mailto:ttkaczyk@rice.edu). For more information visit <http://www.owl.net.rice.edu/~tt3/> or contact Prof. Tkaczyk.