

# Minbiao Ji

## Rapid Label-Free Detection of Brain Tumors with Stimulated Raman Scattering Microscopy

*April 3, 2013*

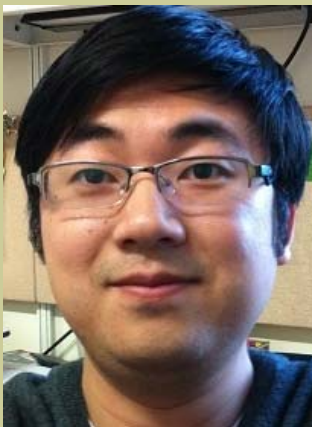
*2:00-3:00 p.m.*

*Room 901*

*Photonics Center*

*8 Saint Mary's Street*

*Refreshments will  
be served*



Surgery is an essential component in the treatment of brain tumors. However, there is no reliable method for delineating a tumor during surgery. This talk will describe the use of Stimulated Raman Scattering (SRS) microscopy for differentiating a healthy brain from a tumor-infiltrated brain, based on histoarchitectural and biochemical differences. Unlike traditional histopathology, SRS is a label-free technique that can be rapidly performed *in situ*. Dr. Ji will discuss the ability of SRS microscopy to differentiate tumors from non-neoplastic tissue in an infiltrative human glioblastoma xenograft mouse model. He will also discuss the excellent correlation between SRS and H&E microscopy for detection of glioma infiltration ( $\kappa=0.98$ ). He will also report on the first *in vivo* application of SRS microscopy to reveal tumor margins that are undetectable under standard operative conditions. By providing rapid assessment of the operative field, SRS microscopy may ultimately improve the safety and accuracy of surgeries where tumor boundaries are visually indistinct.

Dr. Minbiao Ji received a B.S. in Physics from Peking University, China and a Ph.D in Physics from Stanford University. He is currently a postdoctoral fellow in Sunney Xie's group at Harvard University. Dr. Ji was trained as an ultrafast laser spectroscopist during his Ph.D., and worked on various physical chemistry problems. His current research interests focus on nonlinear coherent Raman microscopy, driving the label-free imaging technique toward biomedical uses, including intraoperative, real-time brain tumor detections and imaging protein misfolding diseases.