Detection of benign epithelia, prostatic intraepithelial neoplasia, and cancer regions in radical prostatectomy tissues using Raman spectroscopy SUNEETHA DEVPURA, JAGDISH S. THAKUR, Wayne State University, FAZLUL H. SARKAR, WAEL A. SAKR, Karmanos Cancer Research Institute, VAMAN M. NAIK, University of Michigan, Dearborn, RATNA NAIK, Wayne State University — We have studied benign epithelia (BE), prostatic intraepithelial neoplasia (PIN), adenocarcinoma, and cancerous tissues of different Gleason scores in human prostrate bulk tissues using Raman spectroscopy. The data shows two main differences in the Raman spectral features of BE, PIN and cancerous tissues: (i) A strong variations in the peak intensities, (ii) shift in certain peak positions. In order to quantify these variations, Raman data were analyzed using chemometric methods of principal component analysis (PCA) and discriminant function analysis (DFA). The PCA and DFA clearly separated the data into three main distinct pathological groups representing BE, PIN and cancer. Similarly the analysis of different Gleason scores shows that the data can be categorized into three distinct groups representing Gleason score 6, 7, and 8. The results demonstrate that Raman spectroscopy can be used to distinguish different stages of the prostrate cancer.

Suneetha Devpura
Wayne State University