

Abstract Submitted
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Detection of benign epithelia, prostatic intraepithelial neoplasia, and cancer regions in radical prostatectomy tissues using Raman spectroscopy¹ SUNEETHA DEVPURA, JAGDISH S. THAKUR, RATNA NAIK, Wayne State University, FAZLUL H. SARKAR, WAEL A. SAKR, Karmanos Cancer Institute, VAMAN M. NAIK, University of Michigan-Dearborn — In this study we have investigated Benign Epithelia (BE), Prostatic Intraepithelial Neoplasia (PIN), adenocarcinoma, and different Gleason scores in human prostate bulk tissues using Raman spectroscopy. A careful investigation of the data shows that two main differences in the Raman spectral features of BE, PIN, and cancerous tissues: (*i*) a strong variations in the band intensities of certain bands, (*ii*) shift in certain band positions. In order to quantify these variations, Raman data were further 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 cancerous state in tissue. Similarly the analysis of the Raman data of tissues with different Gleason scores shows that the data can be categorized into three distinct groups representing Gleason scores 6, 7, and 8. The results of this study demonstrate that Raman spectroscopy can diagnose different stages of the prostate cancer.

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