

## Application of Raman Spectroscopy for Breast Cancer Diagnosis

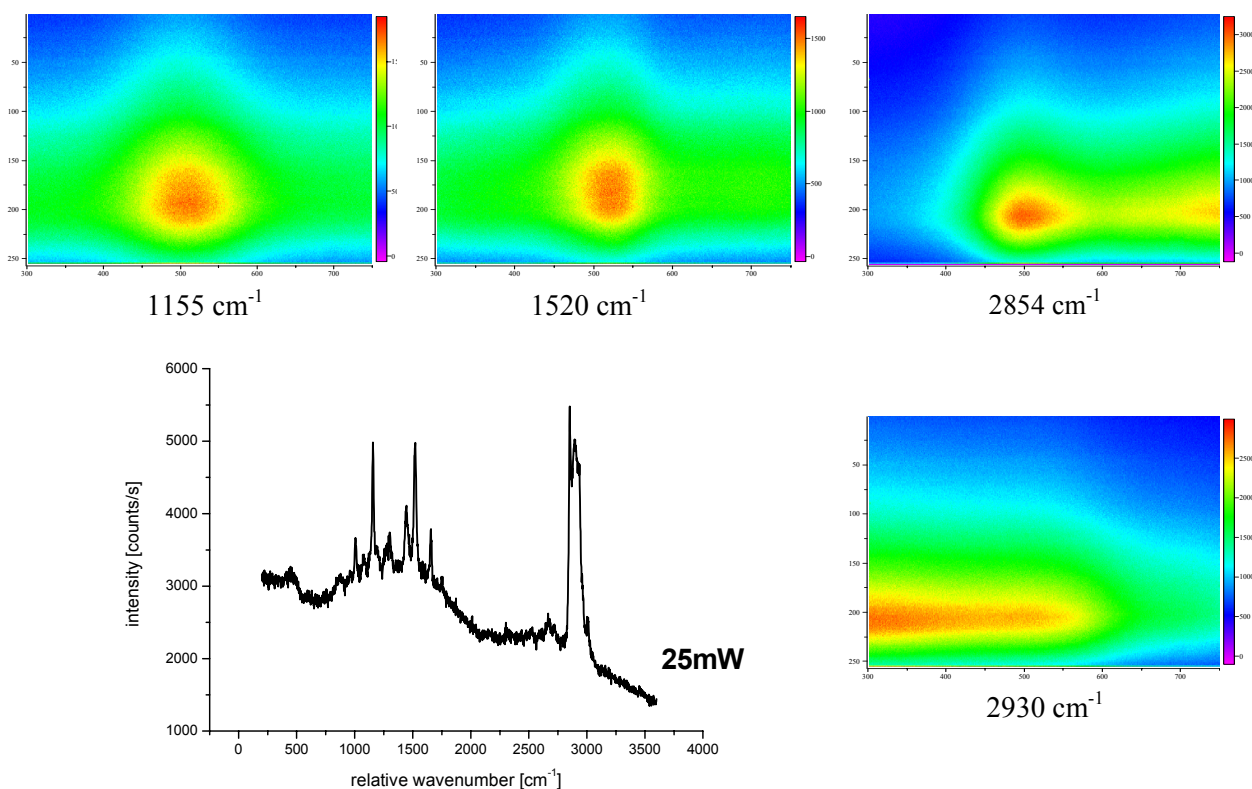
Jakub Surmacki<sup>1</sup>, Beata Brożek-Płuska<sup>1</sup>,  
Halina Abramczyk<sup>1</sup>, Zbigniew Morawiec<sup>2</sup>, Marek Tazbir<sup>2</sup>

<sup>1</sup> Institute of Applied Radiation Chemistry, Laboratory of Laser Molecular Spectroscopy,  
Technical University of Lodz, The Faculty of Chemistry, Wroblewskiego 15, 93-590 Lodz, Poland  
e-mail: jsurmacki@mitr.p.lodz.pl

<sup>2</sup>Kopernik Hospital, Oncology Ward, Paderewskiego 4, 93-513 Lodz, Poland

The Raman spectra of normal, malignant and benign lesions tissues obtained from the human breast surgeries have been studied. Raman and fluorescence spectra have been recorded for *ex vivo* samples from 80 patients. Spectra were analyzed using principal component analysis (PCA) and Matlab.

The results demonstrate the ability of Raman spectroscopy to detailed description of cancer tissue and distinguish between normal, malignant and benign types. Our results demonstrate that the spectra of normal tissue are dominated by lipids and carotenoids [Fig. 1]. Moreover, the analysis of the carotenoids bands combined with the auto-fluorescence of the time allows confirming the cancer diagnosis [1-2].



**Fig. 1:** Raman spectra of healthy tissue

- [1] H. Abramczyk, B. Brożek-Płuska, K. Kurczewski, Z. Morawiec, M. Tazbir: *From femtosecond dynamics to breast tissue diagnosis by Raman spectroscopy and Raman Imaging*. ISRPS Bulletin 20 (2008) 37.
- [2] H. Abramczyk, I. Placek, B. Brożek-Płuska, K. Kurczewski, J. Surmacki, Z. Morawiec, M. Tazbir: *Human breast tissue cancer diagnosis by Raman spectroscopy*. Spectroscopy 2008 in print.

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