



Improved Tumor Margins Detection Using Gold Nanorods



The Problem

Most optical-physiological diagnoses are based on the insertion of light, with known parameters, to a tested tissue, followed by the measurement of the reflected, transmitted or absorbed light. Changes in the optical properties of this light such as its spectrum, polarization or intensity, compared to the injected light, result from interactions of the irradiated light with the tissue's components. Current methods are not only as sensitive as required but also are invasive causing pain to patients.



The Solution

Our cutting-edge method for cancer detection is based on Diffusion Reflectance (DR) measurements of gold nanorods (GNR).



The Commercial Benefit

Like no other current solution, it is a noninvasive detection method for oral cancer (including mouth, tongue, ear, nose, throat and vocal chords cancers). Compared to competing solutions, our novel innovation has high sensitivity (90%), selectivity and specificity (97%). We present simple and fast tumor detection with no intrusive surgery and up to 6 mm deep in the tissue.



Market Potential

The global cancer diagnostics market for the forecast period of 2015 to 2020. This market is expected to reach \$13.1 Billion by 2020 from \$7.1 Billion in 2015, and is poised to grow at a CAGR of 12.9% during the forecast period.



Target Markets/Industries

- Cancer diagnostic tools
- Cancer imaging market
- Cancer research laboratories
- Cancer research foundations
- Cancer organizations



Intellectual Property

Granted Patent (US 10,335,041)



Team: Primary Inventor

Prof. Dror Fixler

- Prof. Dror Fixler is director of the Institute of Nanotechnology and Advanced Materials (BINA), and a Lecturer at the Faculty of Engineering.
- He is also a visiting professor in Technical Institute of Physics and Chemistry, China.
- His primary focus is developing new technologies for super resolution microscopy, medical testing, and communications networks.
- Fixler received the European Science Foundation's Plasmon-Bionanosense Award and the President's International Fellowship Initiative Award of the Chinese Academy of Sciences (CAS).
- Prof. Dror Fixler invented more than 12 patents.



Future Research

Improved resolution and penetration depth of the optical set up. Spatial intensity based map of the cancerous tissue Endoscope-based diffusion reflection measurements for internal organs imaging.



The Opportunity

Diagnostic companies are invited to license our patent through licensing agreement with sponsored research.



Keywords

- Cancer diagnostics,
- Cancer noninvasive detection,
- Diffusion Reflectance
- Gold nanorods
- Cancerous tissue