

Abstract Submitted  
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**Carbogen Enhanced Femto Oximetry Breast Cancer Diagnosis Method with High Specificity** BOGDAN C. MAGLICH, California Science and Engineering Corp., J.K. SHULTIS, C.J. SOLOMON, Kansas State University — As large malignant tumors are oxygen deficient (hypoxic), cancer could be diagnosed *in vivo* and online, by non-invasive measurement of oxygen difference between tumor and adjacent tissue. Computer simulations of noninvasive diagnosis by Femto Oximetry (FO) of hypoxia in 1 cm tumor in 10 cm breast shows that background  $\gamma$ 's from non hypoxic tissue will mask hypoxia. To amplify the hypoxic-to-normal O difference, air breathing will be replaced with carbogen (O<sub>2</sub> 95%, CO<sub>2</sub> 5%) using vasco-constrictive property whereby carbogen breathing increases O in normal tissue, while not in malignant hypoxic tumors. 90% hypoxia will be detectable by FO with specificity 99%. Our method will be tested on R3230 tumors in Fischer rats at UCI.

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