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**Melker et al.**

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- (54) **APPLICATION OF NANOTECHNOLOGY AND SENSOR TECHNOLOGIES FOR EX-VIVO DIAGNOSTICS**
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- (\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 189 days.

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(52) **U.S. Cl.** ..... **435/7.1; 435/4; 435/6; 436/501; 436/535; 422/68.1; 422/82.01; 422/82.02; 422/98**

(58) **Field of Classification Search** ..... **435/7.1, 435/6, 182, 4; 436/535, 501; 73/23.2, 24.06; 422/68.1, 82.01, 82.02, 98; 702/19, 22**

See application file for complete search history.

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(57) **ABSTRACT**

Systems and methods for the ex vivo diagnostic analysis of samples of bodily fluids, including exhaled breath and blood. The present invention uses nanostructure-based assemblies in combination with sensor technology to provide an efficient and accurate means for identifying the presence of a target analyte/biomarker in a sample of bodily fluid. In a preferred embodiment, the nanostructure-based assemblies of the present invention include detecting means such as RNA oligonucleotide chains or "apparatus" and releasable surrogate markers such as DMSO.

**11 Claims, No Drawings**