

Figure 1

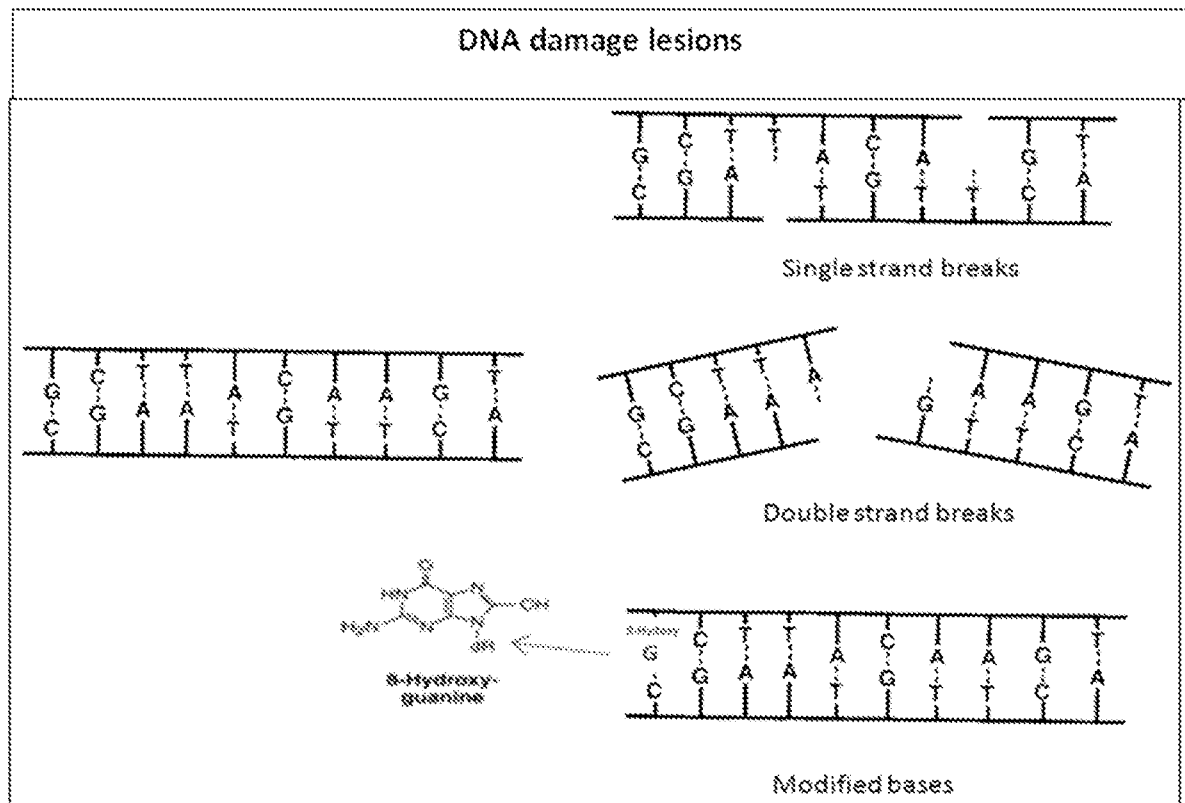


Figure 2

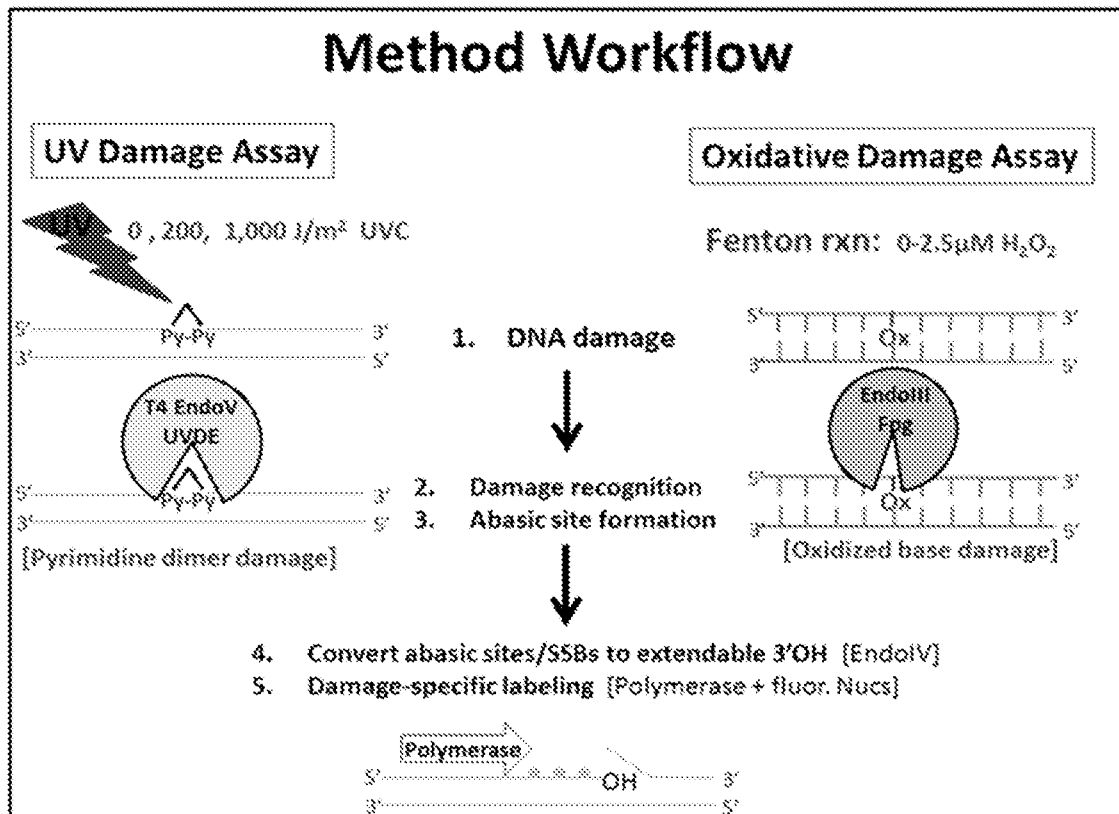


Figure 3

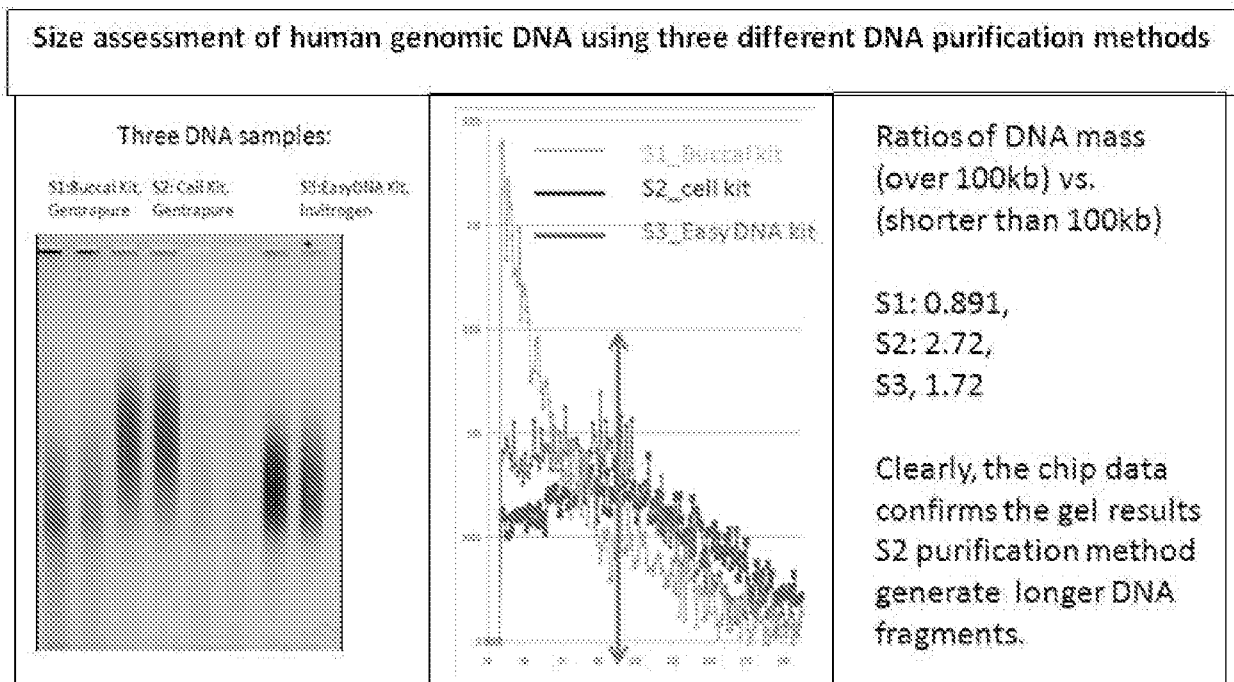
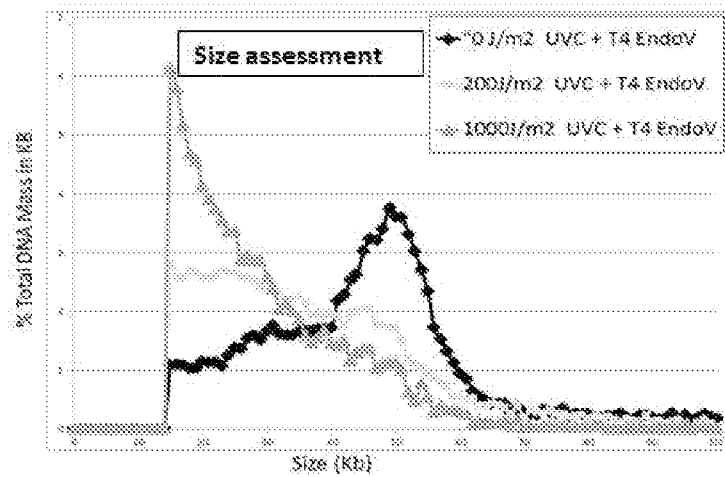


Figure 4



Label assessment	
UVC Exposure (J/m ²)	KBp/Nick
0	138.6
100	96.4
500	110.1
1,000	63.4
2,500	69.0
5,000	52.7

Figure 5

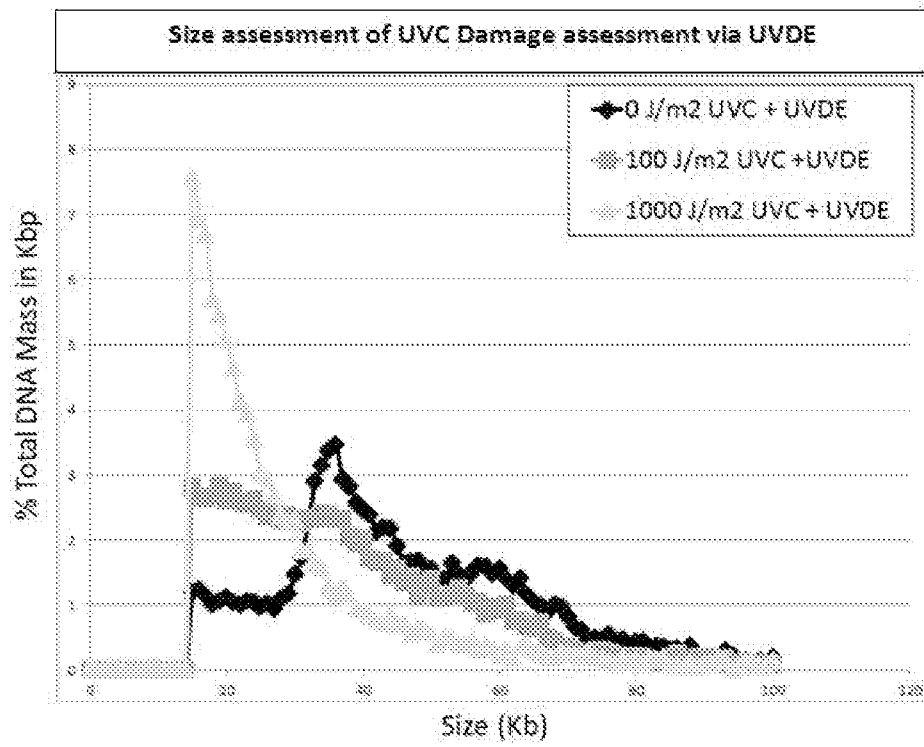


Figure 6

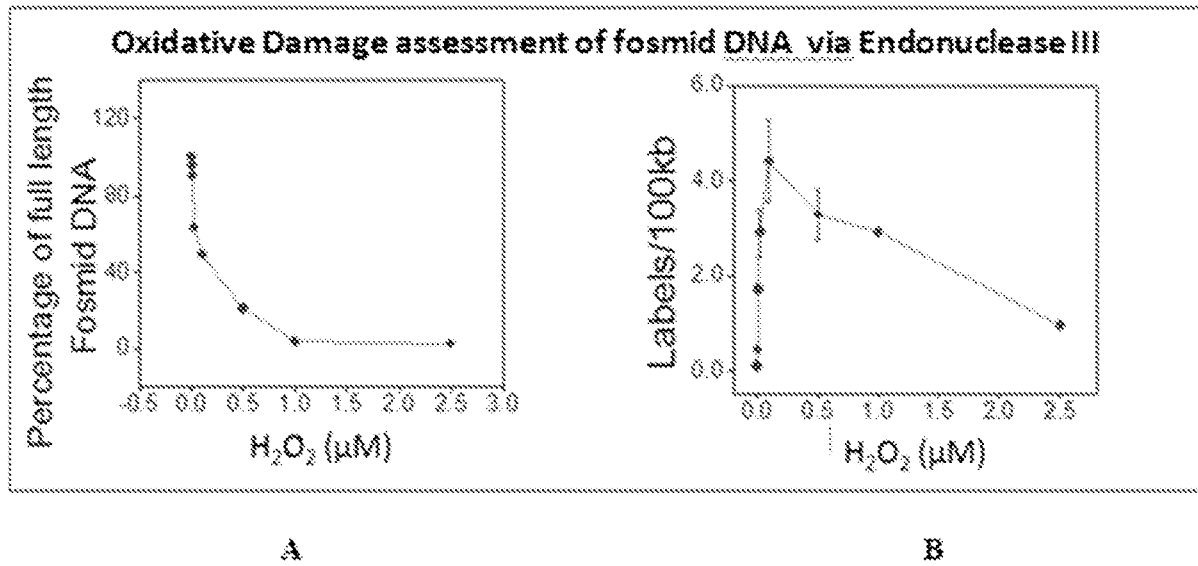


Figure 7

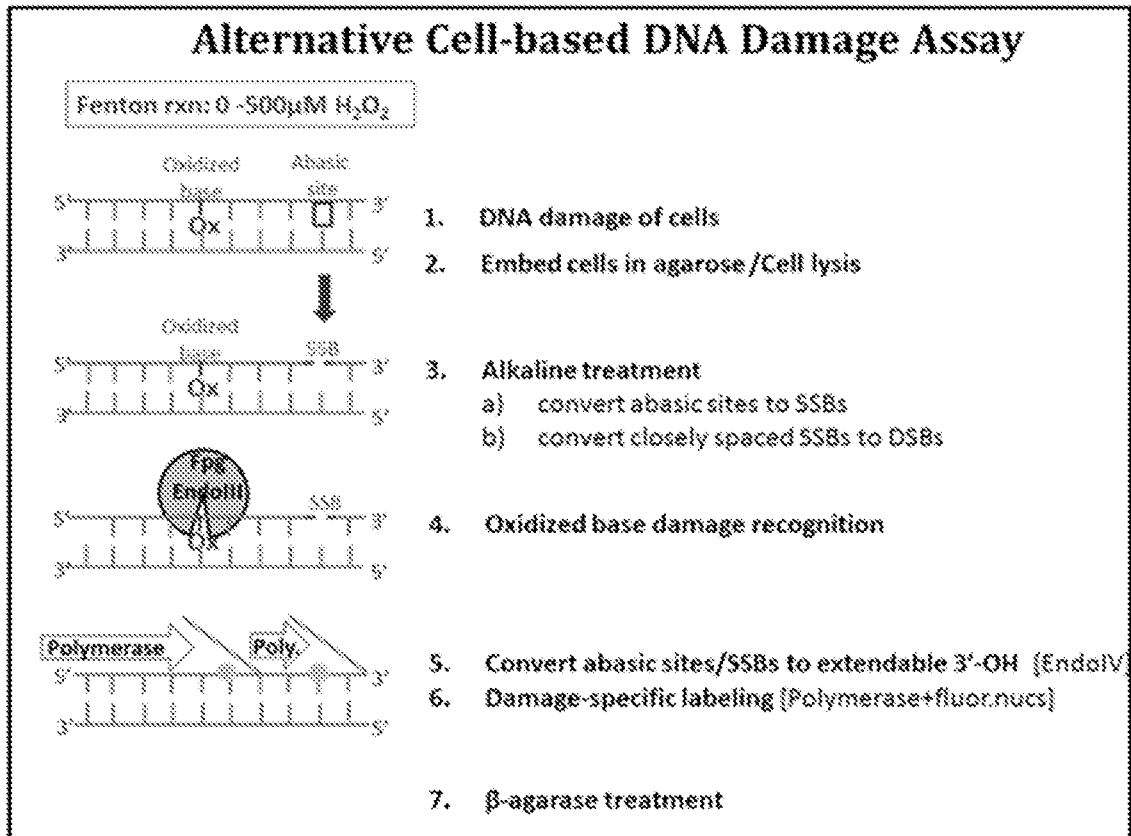
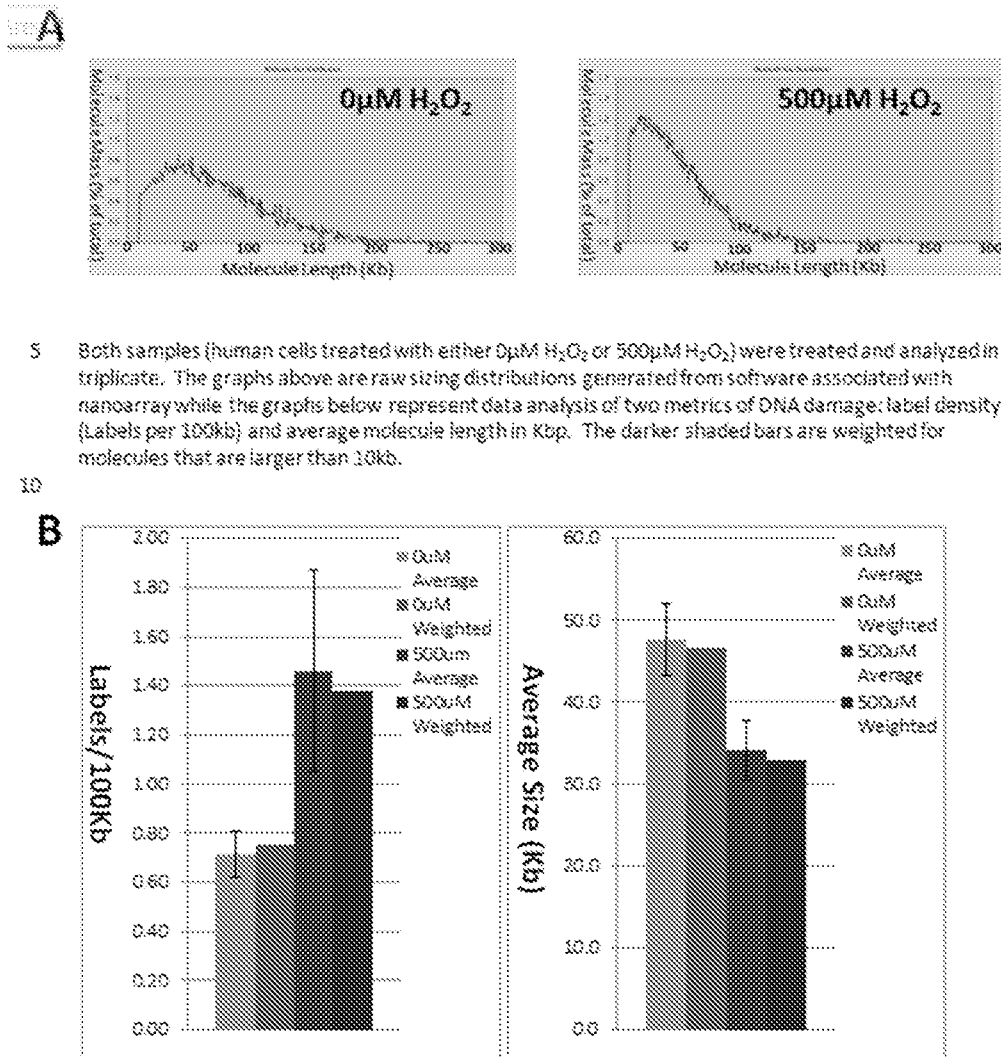


Figure 8



5 Both samples (human cells treated with either 0μM H₂O₂ or 500μM H₂O₂) were treated and analyzed in triplicate. The graphs above are raw sizing distributions generated from software associated with nanoarray while the graphs below represent data analysis of two metrics of DNA damage: label density (Labels per 100kb) and average molecule length in Kbp. The darker shaded bars are weighted for molecules that are larger than 10kb.

10

Figure 9

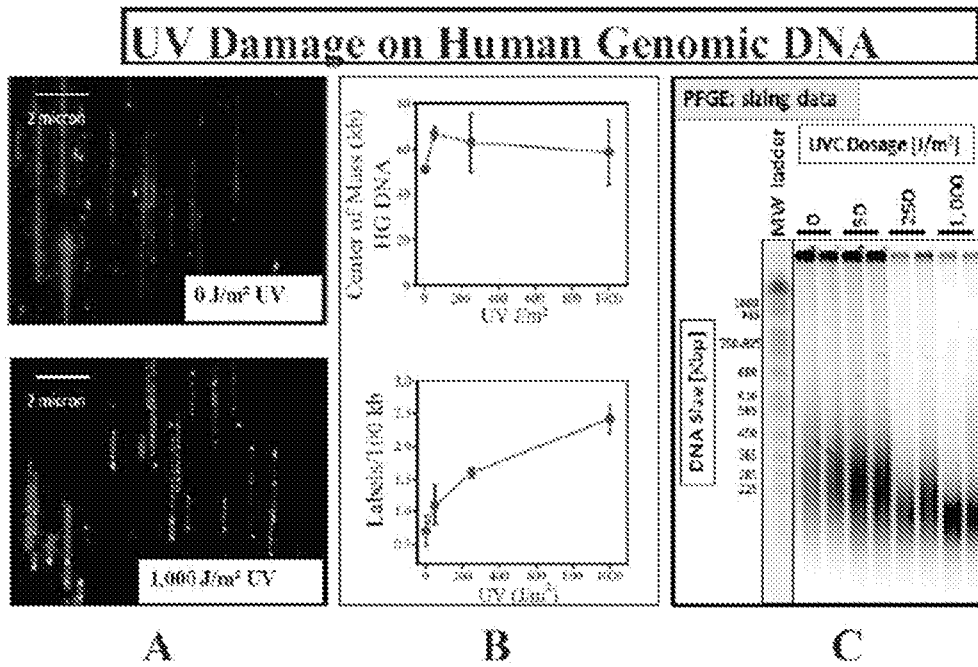


Figure 10

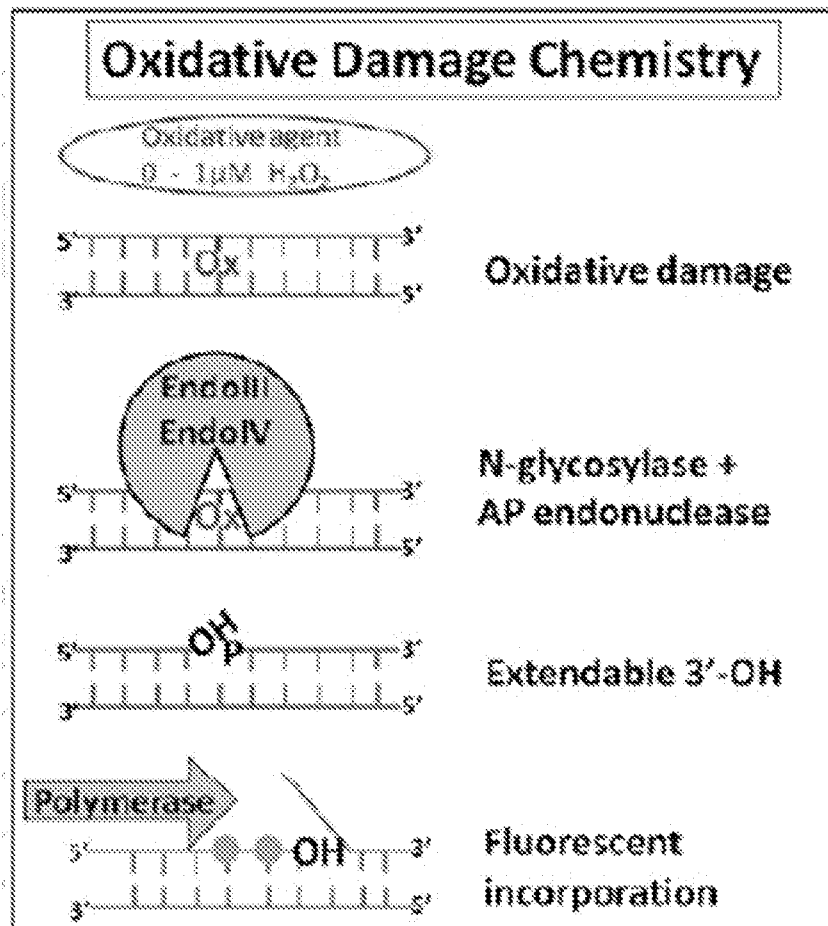


Figure 11

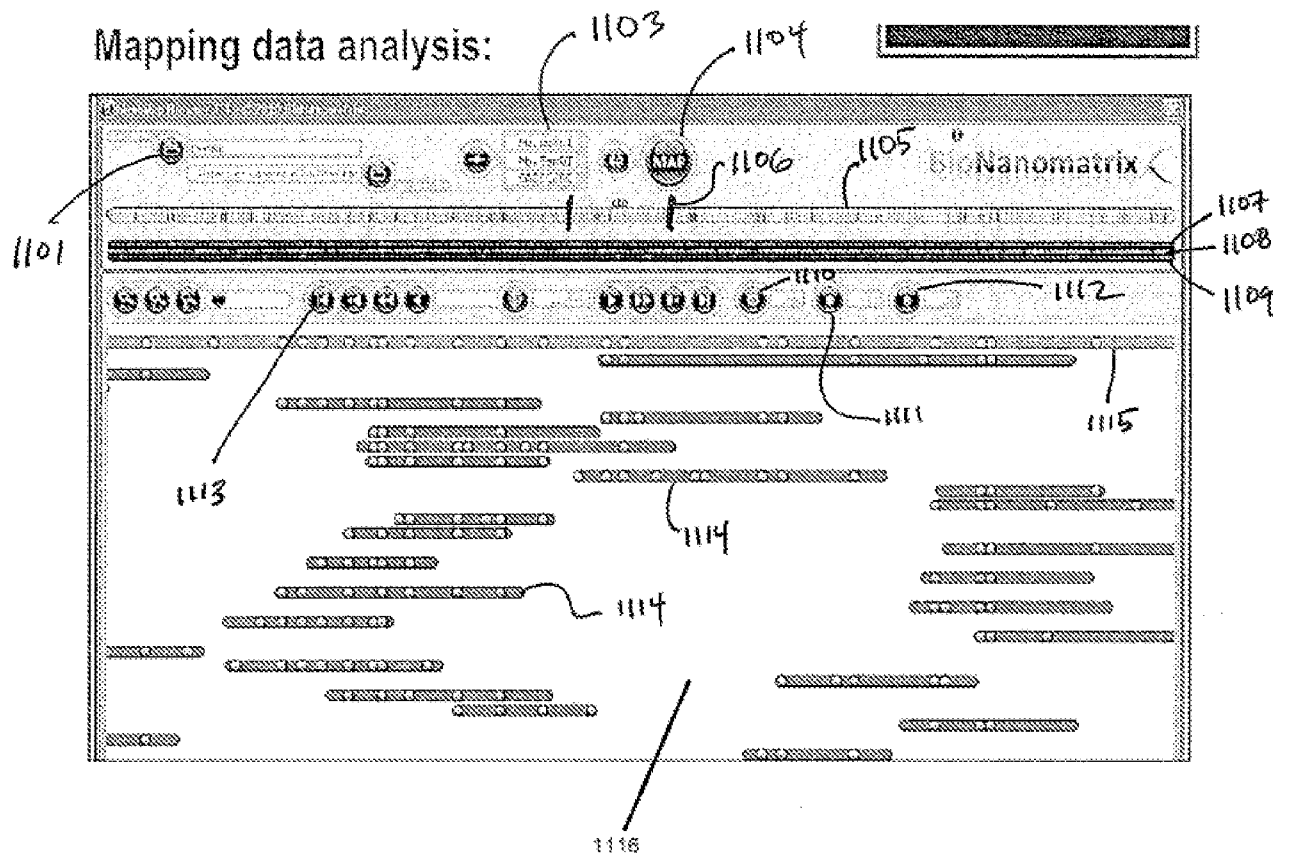


Figure 12

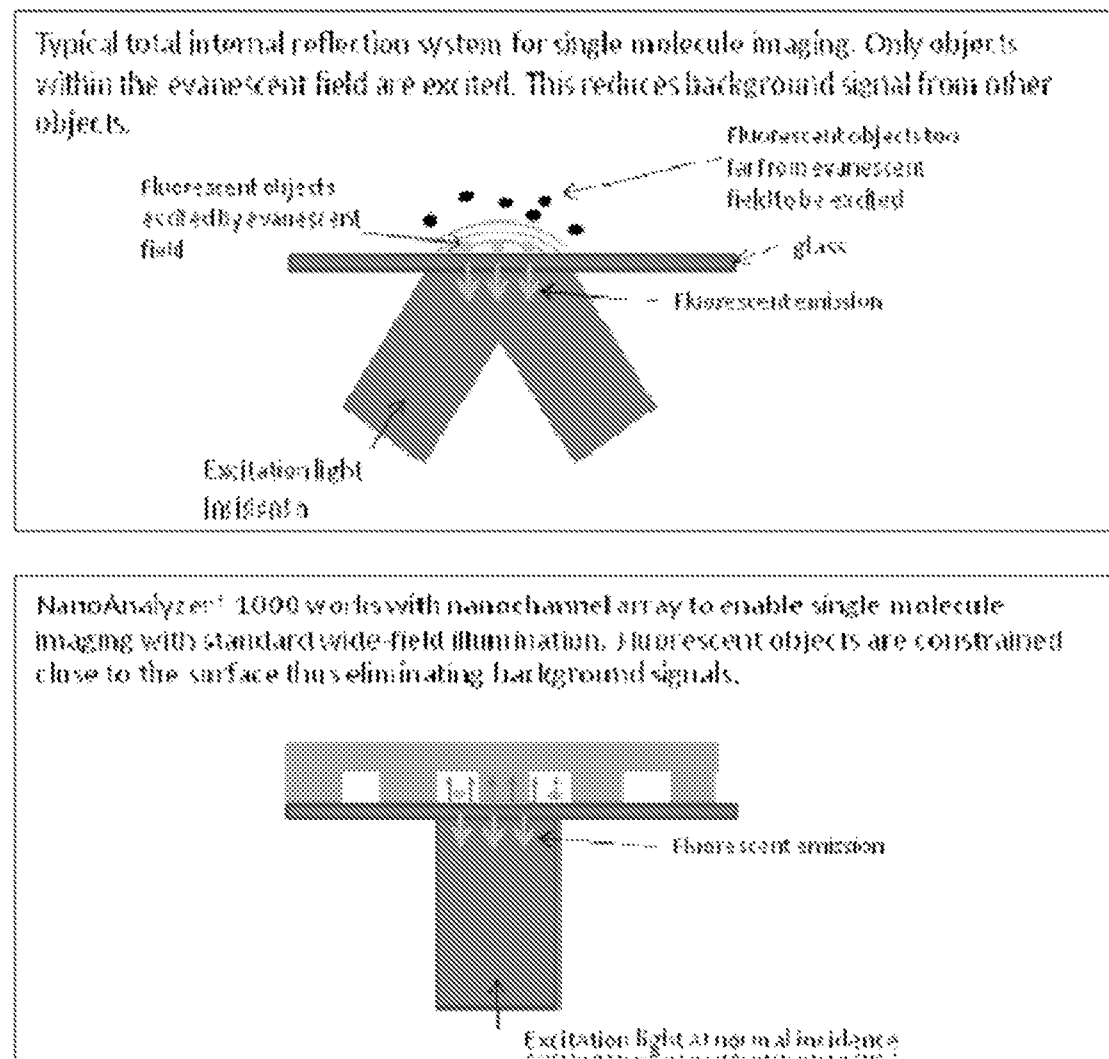
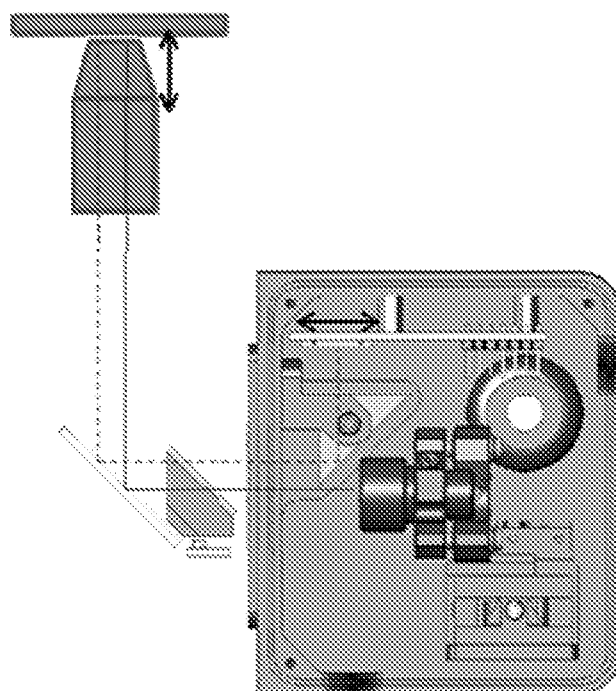


Figure 13



Schematic of autofocus system for NanoAnalyzer® 1000

Figure 14

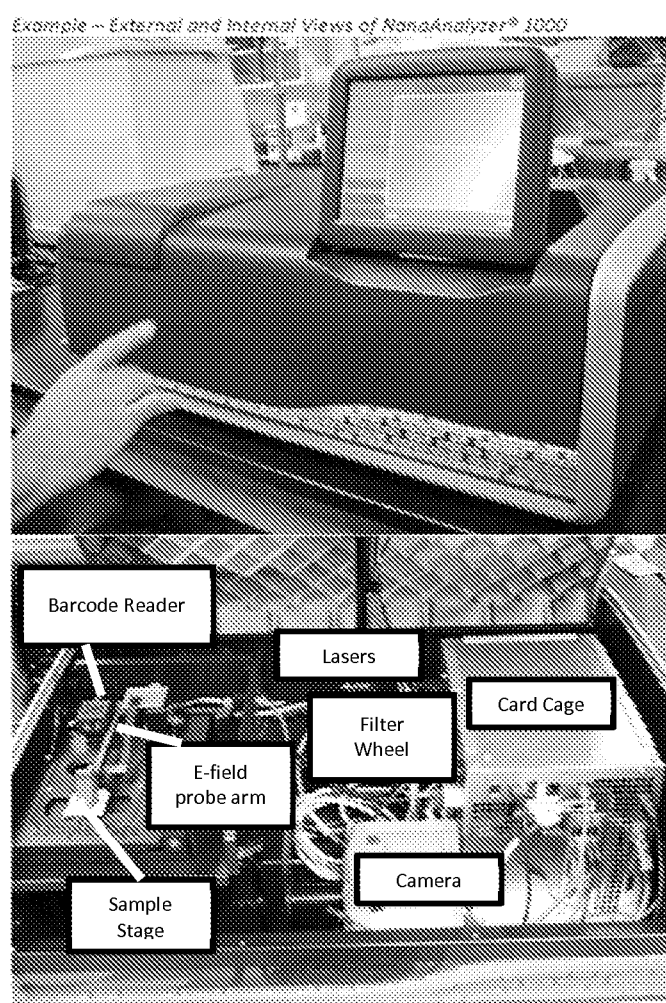


Figure 15

*Non-limiting embodiments
FOR VIEW*

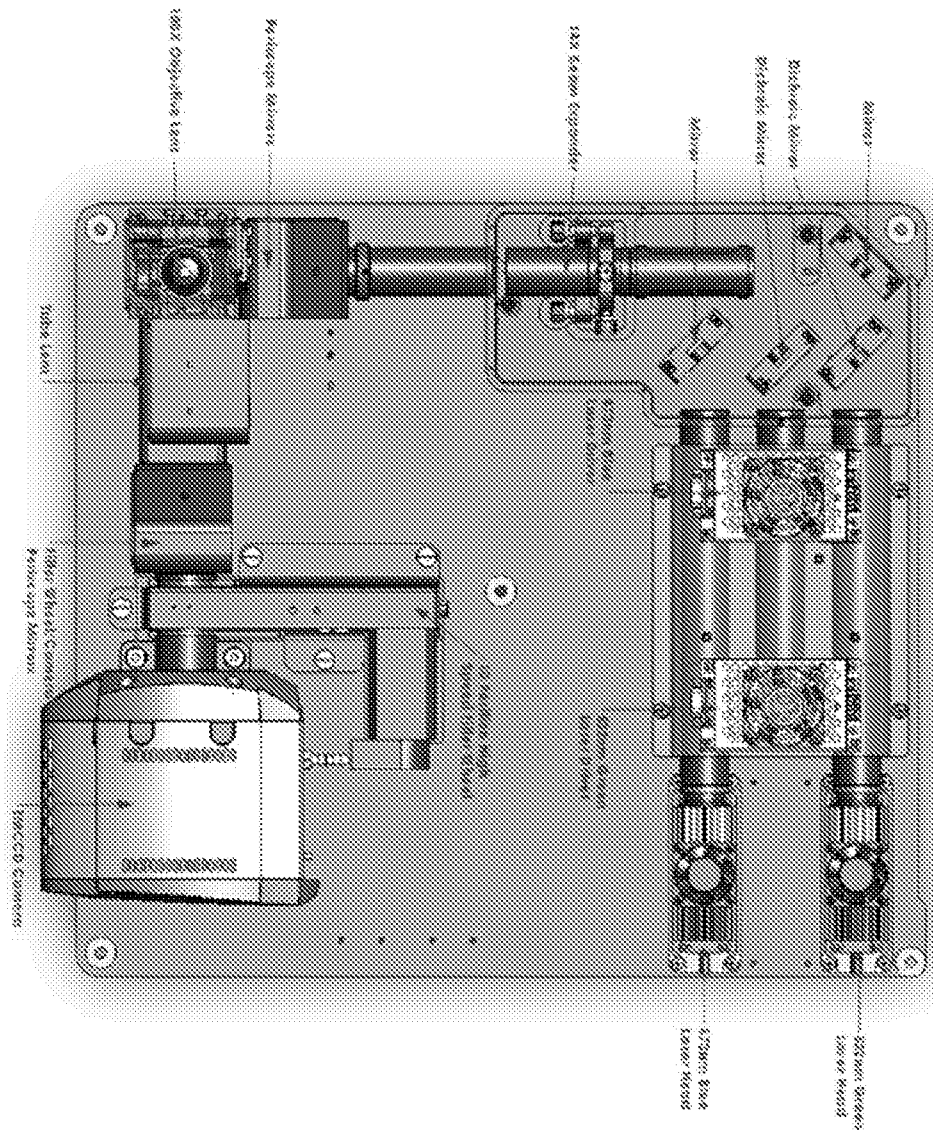


Figure 17

Example - Instrument workflow

Included is an illustrative sequence of operation when using the disclosed systems (e.g., NanoAnalyzer® 1000) for imaging with single molecule sensitivity.

Instrument workflow

1. Nanochannel array loaded into instrument



2. Sample loaded into nanochannel array



3. Electrode-bundle engages to load fluorescent sample and prevent evaporation



4. Automated focusing and registration of fiducial markers on chip.



5. Laser excitation is used to generate fluorescence which is captured by detector as an image



6. Stage moves to next field of view and repeats laser excitation and imaging sequence



7. After rapidly imaging all fields of view, more sample is loaded into array for imaging