

## Intel 's Raman Bioanalyzer System

~Bethany Therrien ~ February 16, 2004 ~ ELE282 ~

The Intel Raman Bioanalyzer System is being built through a collaborative effort between Intel and the Fred Hutchinson Cancer Research Center to build a device with the nanotechnology now used by Intel to detect imperfections in silicon chips, in order to detect diseases and pinpoint imperfections in cells in human samples. Nanotechnology is a branch of engineering that focuses on things that are smaller than one hundred nanometers—the equivalent of about one hundred thousandth of an inch, or about the size of 300 atoms.

Intel uses nanotechnology to create ever-smaller computer microprocessor chips, which are made from components far smaller than human cells. The instrument is based on what is called the RAMAN EFFECT- a kind of chemical barcode. Researchers have filled volumes with various Raman signals and what type of chemical they indicate. The results of the chemical observations are very different patterns of optical wavelength coming out, depending on the molecule being studied. The theory behind building this device is that the same holds true for biological samples as it does for chemical, and

by using this technology the researchers will hopefully have an opportunity to catalog these new Raman effects, linking specific signals with the types of cancer they indicate. This specially designed instrument, the most sensitive of its kind in the world will help them identify the proteins in the human blood serum that will foretell the susceptibility, presence, or prognosis of these diseases. It will also help the researchers to understand the molecular differences between healthy and diseased cells for better diagnostic methods.

Sources:

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Intel states the completion of the construction of the device and recorded results are to be published in 2007.