



## Jefferson Lab Patents Awarded April 4, 2002

### **Radiology Utilizing a Gas Multiwire Detector with Resolution Enhancement**

Inventors: Stan Majewski and Lucasz Majewski

(Field: Detectors)

Traditional X-rays, such as in mammography, use films on which the image is recorded. This is not only expensive, but does not lend itself to modern image examinations such as zooming in or otherwise enhancing regions of interest to doctors. This invention applies physics research detectors – Gas Multiwires – instead of film to record an x-ray image in digital form for high resolution and enhancement.

### **Mini Gamma Camera, Camera System and Method of Use**

Inventors: Stan Majewski, Drew Weisenberger, and Randy Wojcik

(Field: Detectors)

This invention is another in a series of compact medical cameras that this team has invented. This invention uses special collimators, position sensitive photomultipliers and software to improve gamma camera resolution. It is for use in breast cancer and other anatomical imaging for accurately determining the position of cancerous lesions.

### **Gamma-ray Blind Beta Particle Probe**

Inventor: Drew Weisenberger

(Field: Detectors)

Many times during surgery, doctors cannot distinguish between healthy tissue and cancerous tissue. This device is a probe that can assist surgeons in their task by identifying beta particle emitting radiopharmaceuticals that have been concentrated in the cancer due to the cancer's high metabolic rate. This probe helps operating surgeons pinpoint the cancerous tissue so they can cut out only the malignant tissue and not healthy tissue.

### **Heat Detection System and Method**

Inventor: Will Brooks

(Field: Instrumentation)

Most fire alarms rely on detecting smoke or temperature or both before triggering an alarm. Some detect pre-fire gasses that are emitted from, say, insulation. This invention puts specific material that gives off gasses that are easier to detect when something starts to warm up before catching fire.

### **Electrical Apparatus Lockout Device**

Inventor: Rick Gonzales

(Field: Instrumentation)

Some inventions are very obvious you wonder why no one has thought of it before. But there is always the first time. This invention is one of those. It uses a straightforward mechanism to wedge and lock in place a plastic shield that prevents plugging in the power chord to an electrical or electronic device, such as a computer.



## Jefferson Lab Patents Awarded April 4, 2002 (continued)

### **Sensitive Hydrogen Leak Detector**

(Field: Instrumentation)

Inventor: Ganapati Rao Myneni

Hydrogen forms one of the smallest molecules around. As such it can leak out of containers through microscopic cracks and voids that most other gasses can't. With the increased use of hydrogen in, for example, the aerospace program, there is a need for a sensitive hydrogen leak detector. This invention does just that.

### **Flexible Cryogenic Conduit**

(Field: Accelerator Technology)

Inventors: Paul Brindza, Robin Wines, James Joseph Takacs

We use a lot of very cold liquids in our modern technological world. Liquid nitrogen, helium, oxygen. Flexible devices that can handle such fluids can be very cumbersome and expensive. This invention is an inexpensive solution. It uses a series of concentric corrugated tubes and super insulation to make up the flexible hose. The materials are commonly available and the configuration is simple to manufacture. The result is an efficient, relatively inexpensive flexible device to transfer cryogenic fluids.

### **Superconducting Accelerator Cavity with a Heat Affected Zone having a Higher RRR**

Inventors: John Brawley and Larry Phillips

(Field: Accelerator Technology)

Particle accelerators today increasingly use superconducting radio frequency cavities made out of pre-formed niobium components that are welded together. Traditional e-beam welding leaves welding puddles and sometimes voids that limits the rf performance of the welded structure. This invention produces a weld bead that is smooth and flat.

### **Application Accelerator System Having Bunch Control**

Inventors: Dunxiong Wang and Geoffrey Krafft

(Field: Accelerator Technology)

Particle bunch length is very important in many state-of-the-art accelerators such as FELs and CEBAF. By controlling the bunch length of the accelerated particle beam we can insure peak performance and efficiency. This invention monitors the Coherent Synchrotron Radiation from the particle beam and then uses that information to control the particle bunches in the accelerated beam.