

Patented Technology Licensing Opportunity



Fine Wire Quality Testing System

For fast and non-invasive, in-line quality testing of fine conducting wires

System Advantages

- * Quick, simple, robust testing method
- * Quantitative testing
- * Potentially continuous testing
- * Non-invasive and sensitive to functional flaws
- * Easily detects manufacturing asymmetries

Quality Assurance Needs

Very small diameter, conducting wire is used in a variety of applications, including:

- * High-performance electronics
- * Miniaturized components
- * Jefferson Lab particle detectors

A quality assurance inspection can ensure that only fine-quality wire leaves the factory or is installed in product, reducing shipments of bad wire or returns of faulty products.



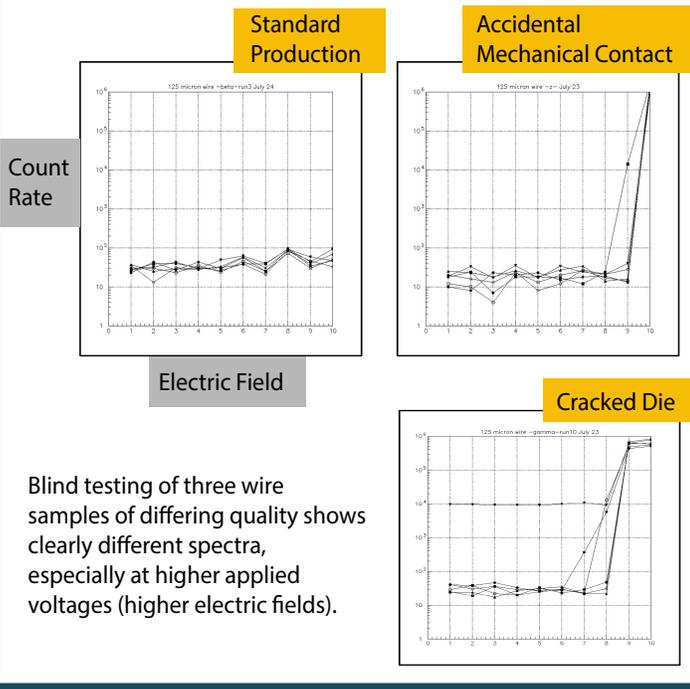
Wire Tester Technology Development

Jefferson Lab requires high-quality, fine conducting wires for use in highly sensitive, sophisticated and expensive sub-atomic particle detectors that are used to conduct world-leading experiments in nuclear physics. These detectors contain thousands of fine wires precisely positioned in gaseous volume. Good fine wires carry electric current with little loss, while unacceptable wires leak current into the volume or may even break down during use, thus distorting experimental results.

A team of Jefferson Lab staffers has developed a fine wire quality testing system to ensure that only wire of acceptable quality is installed in its particle detectors. The ingenious and compact device quickly and efficiently counts individual electrons that are released from a wire's surface. Good-quality wire shows a much lower electron emission rate as a function of increasing voltage than does wire of poor quality.

The team also conducted blind testing with the device on wire samples of unknown quality, and they found that the device was able to quickly and easily identify poor-quality wire. The device's principles of operation may be reviewed in U.S. Patent #8,863,568.

Blind Quality Control Test Results



Performance Testing of Fine Wires

The setup is suitable for use as an in-line monitor; with the wire simply pulled through the modest-sized (~ 1 ft. long) device after the final dies or finishing processes. It can be used in a "go or no-go" fashion with the electric field held at a value that gives a low count rate for good wire and a high rate for wire of poor quality.

Licensing Information

The transfer of technology developed at Jefferson Lab to the private sector is an important element of the lab's mission. If you are interested in licensing this or other intellectual property, contact:

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