

## Application Note

### Visualization of Under-drawings in the Near-Infrared (NIR) Spectrum



Goodrich's SUI (Sensors Unlimited, Inc.) team has applied its solid-state Indium Gallium Arsenide camera to the fields of art history and conservation. Non-invasive (remote) examination of art objects including paintings, manuscripts, textiles, etc., can be easily accomplished in the Near Infrared (NIR) spectrum with the model SU320-1.7RT. Many paints that are reflective in the visible spectrum are transparent in the NIR. The SU320-1.7RT "sees" through the paint and images the "under-drawing".

Numerous artists composed a preliminary sketch on a canvas or wood panel. The outline drawing is done with a soot/charcoal substance, which is highly reflective in the NIR spectrum. This drawing could be changed if the artist didn't like the result. In the finished painting these outlines were covered by the paint, and thus invisible.

The science of Infrared Reflectometry (IRR) with SUI's solid-state detector technology has helped to understand the style and techniques of numerous artists. Renoir's "Luncheon of the Boating Party" at the Phillips Collection, Washington, DC was examined with the use of IRR to show what was "invisible" to the "naked" eye.

The SU320-1.7RT has both a video output for direct interface to standard monitors and VCRs and a digital output for integration into a customer's computer. The camera is superior to any other solid-state or vacuum tube in the NIR spectrum. It is lightweight, easily transportable, requires no cooling, and does not exhibit defects such as image lag, persistence, blooming, low damage threshold, or tube wear-out.

The images below show an oil painting of sunflowers as viewed with a visible CCD camera (on the right) and in the NIR with a SU320-1.7RT (on the left). Please call SUI to have a demonstration at your site.



If you need further technical support, please contact our sales department via email [sui\\_support@goodrich.com](mailto:sui_support@goodrich.com) or call us at 609-520-0610.

About Goodrich's SUI Team: Founded in 1991, SUI (Sensors Unlimited, Inc.) is the leading manufacturer of indium gallium arsenide (InGaAs) PIN and avalanche photodiode arrays that are used in shortwave and near infrared imaging for military, industrial, spectroscopic, machine vision, and telecommunications applications. SUI provides InGaAs photodiode array processing as a foundry service and designs custom readout integrated circuits for unique imaging applications within its ISO 9001 certified facility. For more information, visit [www.oss.goodrich.com/sui](http://www.oss.goodrich.com/sui).