APPLIED RESEARCH & PHOTONICS INC
http://arphotonics.net
Email: info@arphotonics.net

Applied Research & Photonics
470 Friendship Road, Suite 10
Harrisburg, PA 17111
Phone: 717-220-1003

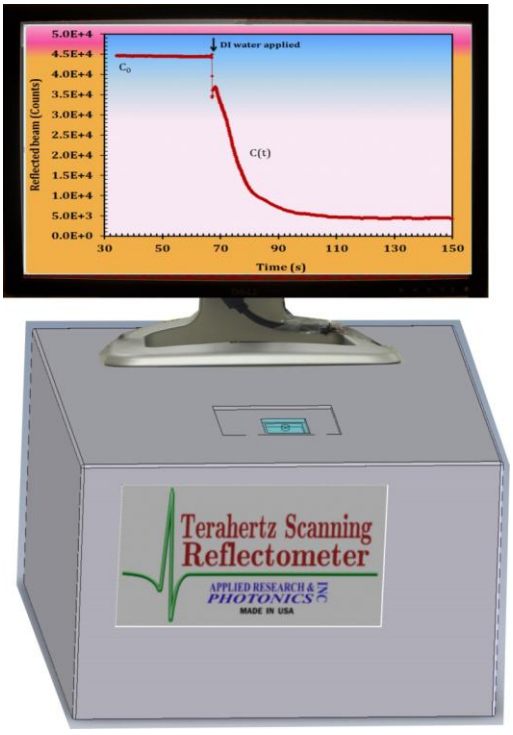
FOR IMMEDIATE RELEASE

ARP is the winner of the 2011 CLEO/*Laser Focus World* Innovation Award

Harrisburg, PA, March 30, 2011 — Applied Research & Photonics (ARP) has been announced the winner of the prestigious **CLEO 2011 Innovation Award**. In a note to ARP's CTO, Dr. Anis Rahman, Ms. Angela Stark, Director of Communications of CLEO 2011, mentioned that, "We are pleased to inform you that your entry, "*CW Terahertz Scanning Reflectometer for Direct Measurements of Diffusion Gradient and Kinetics*," has been selected as the **WINNER of the 2011 CLEO/*Laser Focus World* Innovation Award**. Congratulations!" … "The CLEO: Market Focus Committee Chairs, Nick Traggis and Keshav Kumar, and *Laser Focus World* Associate Publisher and Editor-in-Chief Steve Anderson will present the award to your company during the CLEO Plenary and Awards Session on Monday, May 2. The session begins at 6:00 p.m. in the Baltimore Convention Center."

ARP, a leading manufacturer of terahertz spectrometer, will announce its new terahertz scanning reflectometer (THz-SR) at the CLEO conference to be held from May 1–6, 2011 at the Baltimore Convention Center: http://www.cleoconference.org/. ARP will conduct live demonstration in their booth (#1429 http://launch.osa.org/expocadvr2/shows/11cleoe/).

The terahertz scanning reflectometer is the first of its kind that is capable of direct measurement of the concentration gradient of a permeating ingredient across the thickness of a substrate (e.g., skin) and the kinetics (or rate) of such permeation; both in real time and in a non-invasive (non-destructive) fashion without fluorescent labeling or the use of radio-isotopes.



Functionality of Terahertz Scanning Reflectometer

A CW terahertz source (invented at ARP) is used that generates the terahertz radiation from an electro-optic dendrimer via difference frequency method. The terahertz beam is focused on to the specimen at normal incidence. The specimen cell is equipped with a scanning platform that allows direct

measurements as follows. The off-axis parabolic reflector is adjusted such that initially the terahertz beam remains focused on the substrate surface. At this position the motion control can be engaged for scanning the substrate to interrogate the reflectance across its thickness; this gives the $\partial C/\partial x$ when the blank substrate reflectance is subtracted from the reflectance of the same substrate treated with a desired ingredient. However, when the beam remains focused at the surface and the motion control is locked at that position, then the ingredient may be applied on the blank substrate to let it permeate across the thickness while the reflectance is measured in real time. In this case the reflectance is directly proportional to the rate of permeation of the ingredient across the substrate, $\partial C/\partial t$. Knowing both $\partial C/\partial t$ and $\partial C/\partial x$, the diffusion coefficient can be calculated directly from the Fick's second law. All measurements of the THz-SR are controlled by the front-end interface with a Windows PC.

About Applied Research & Photonics

Located in Harrisburg, PA, Applied Research & Photonics, Inc. (ARP) is a nanotechnology company with the core products in the terahertz area. ARP has demonstrated a number of products based on its proprietary dendrimer based nanotechnology. ARP's terahertz spectrometer, TeraSpectra, uses a high-power terahertz source enabling high resolution spectrometry. It has a wider terahertz range (up to ~30 THz) for probing molecular phenomena on time scales from a few femto-seconds to a few tens of pico-seconds. Designed and manufactured in Harrisburg, TeraSpectra offers the capability of solving a number of problems in biomolecular, pharmaceutical, analytical and other research areas. ARP is also working with the US Department of Homeland Security to develop remote detection of explosives for anti-terrorism applications. For more information, visit ARP web site at: www.arphotonics.net or contact:

Dr. Anis Rahman
Applied Research and Photonics, Inc.
470 Friendship Road, Suite 10
Harrisburg, PA 17111
Phone: (717) 220-1003
Email: info@arphotonics.net