

# Stop Disrupting What You Want to Understand

**Olis CLARiTY UV/Vis Spectrophotometers**



**Lipids & Liposomal Suspensions**

**Phytoplankton & Algae**

**Intact Living Cells**

**Nanoparticles**

**Mitochondria**

**Intact Retina**

**Cell Cultures**

**Intact Fruit**

**Zebrafish**

**Hydrogels**

*Your best answers will be found in the  
system's native environment!*





Visit OLISCLARiTY.com frequently!

# OLIS CLARiTY UV/Vis Spectrophotometers

for bioenergetics, drug discovery, nanoparticle studies & more



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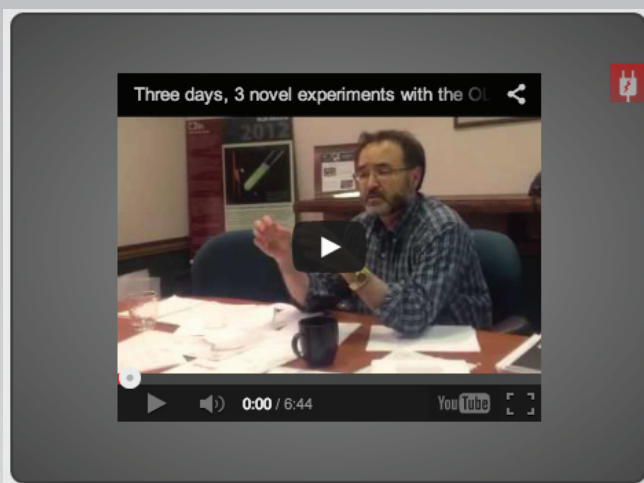
## Recent news

### A guest speaks of his experiments

January, 2014

With each of three experimental sessions, Dr. Gonzalez-Fernandez takes on greater challenges, only to confirm that results from the least reduced (most intact) sample do indeed return the most exciting and definitive results. It was during his visit that the power of **"Stop disrupting what you want to understand"** really hit us.

Federico Gonzalez-Fernandez MD, PhD  
Olmsted & Ross Endowed Chair in Ophthalmology  
University at Buffalo School of Medicine

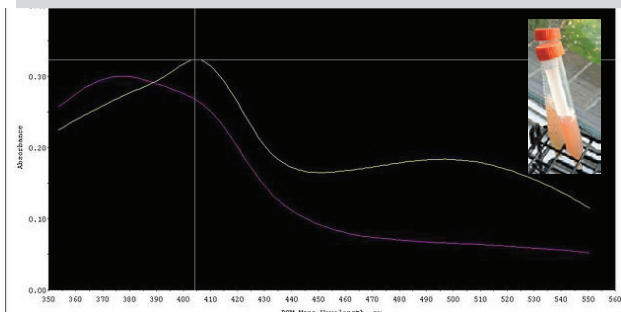


### Monitoring Vitamin A delivery and uptake in a suspension of photoreceptor cells

November, 2013

Day 1 proof of concept experiment, results substantiated by Nobel Prize winner George Wald's 1955 seminal paper on visual pigments & Vitamin A uptake.

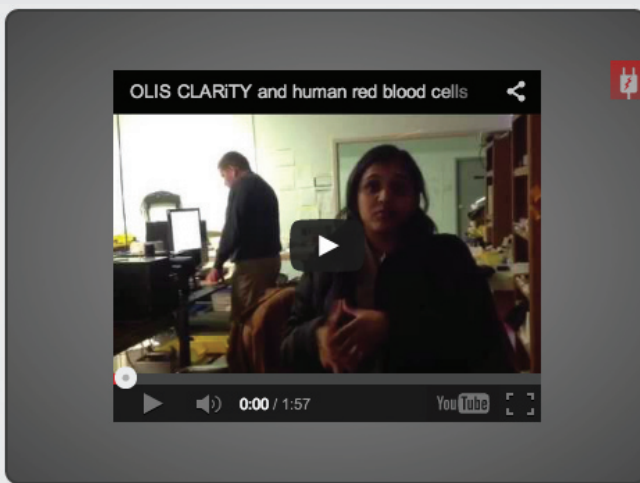
Samples and photograph were provided by Dr. Gonzalez-Fernandez. Experiments were conducted by Drs. Richard DeSa and Federico Gonzalez-Fernandez at the OLIS facility.



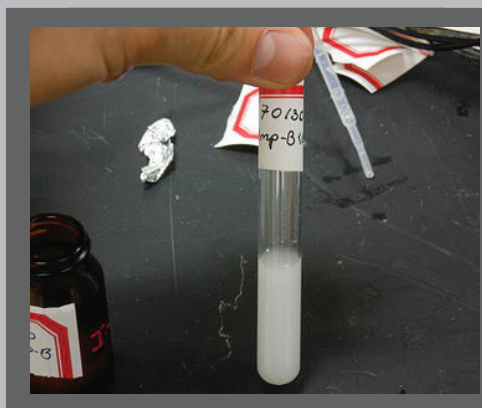
### A guest speaks of her experiments

January, 2014

Working with intact human sickle cell and healthy blood cells, Dr. Mira Patel of Global Blood Therapeutics learned that the ideal marker was not reporting what she hoped for, pointing her in a new direction.



# We update monthly with new videos, publications & experiments



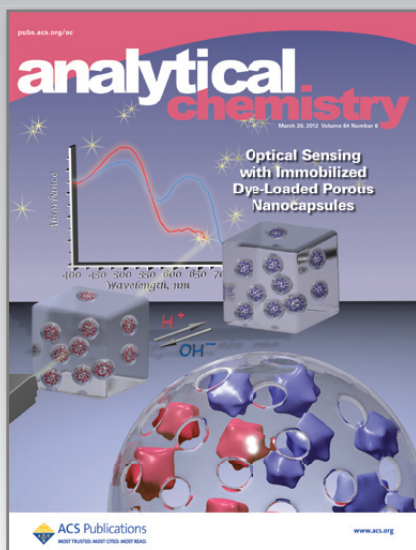
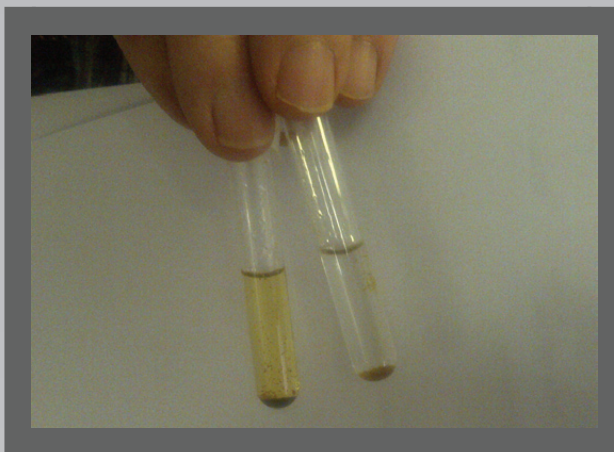
## Exciting new data from the Hartsel Lab: Amphotericin B with a liposomal drug delivery system July, 2013

"Just thought I would send some of our early spectra from Gary's OLIS CLARITY system. As promised, the integrated cavity cells rendered extreme light scattering nearly nonexistent. Here are some spectra from a putative orally available drug delivery emulsion of Amphotericin B (developed by K. Wasan and colleagues at UBC). Quite remarkable that we could pull these spectra out of this milky emulsion (see photo). When the commercial liposomal drug, Abelcet was added it is clear that the drug delivery system began to "dismantle" the lipid particles into drug monomers. This is something we could not have seen any other way... Some spectra taken with a conventional Cary-50 are included to provide a contrast—and what a contrast! I can see where this system could have lots of pharmaceutical applications. :-)"

Prof Scott Hartsel, Department of Chemistry,  
University of Wisconsin-Eau Claire

These data are great improvement over anything we have seen before. We sent these samples to three other companies [which tried integrating sphere and specular reflectance spectroscopies] and got no useful data. I would like to say that if we could afford one of your instruments I would be placing an order today."

Prof Ed Rosenberg,  
University of Montana, May 2012



The **4th CLARITY**  
was used in this cover article!

The first 14 scientists to purchase the OLIS CLARITY spectrophotometers, listed in order of purchase, Blake buying the first in 2010 and Straub's delivered to him November, 2013.

Dr. Prof Robert Blake, Xavier University of Louisiana



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rblake@xula.edu

**Background:** B.S. in Biochemistry at Ohio State, Columbus; Ph.D. in Biochemistry at University of Illinois, Champaign; Post-Doc Research in Biological Chemistry at University of Michigan, Ann Arbor.

**Research Interests:** Fundamental aspects of protein-ligand binding interactions.

<http://www.xula.edu/csp/profiles/blake.php>



Prof Chris Cooper, University of Essex

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**Background:** BSc (Hons, Class I) in Biochemistry at University of Bristol; Ph.D. in Biophysics at University of Guelph, Ontario.

**Research Interests:** Oxidative stress, haem proteins and disease, and control of oxygen consumption.

<http://www.essex.ac.uk/bi/mef/profile.asp?ID=1116>



Prof Robert Poole, University of Sheffield

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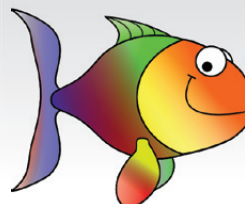
**Background:** BSc (First Class), PhD, DSc (Wales), FRSC, FRS, SRC Fellowship at the University of Dundee, Reader then Professor at King's College London, now West Riding Professor of Microbiology, The University of Sheffield.

**Research Interests:** Bacterial physiology, energetics, biochemistry and molecular genetics, especially the microbiology of oxygen, CO and NO  
<http://www.sheffield.ac.uk/microbiology/poole/>

## Meet the pioneering scientists to purchase the first 14 CLARITY spectrophotometers

November, 2013

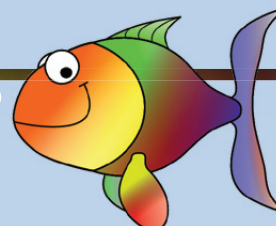
See their publications citing the CLARITY  
in Analytical Chemistry, JACS, PLoS ONE,  
Frontiers in Microbiological Chem, and more on  
[www.olisclarity.com!](http://www.olisclarity.com!)



The CLARiTY capitalizes on 50 years of efforts employing integrating cavities. These spectrophotometers have performance characteristics which allow you to study samples in their native or near-native state.

- Obtain accurate absorbance on all light absorbing samples, not just reduced and purified clear solutions
- Thus, minimal sample disruption (pursue "post-reductionist" experiments)
- And minimal sample preparation!
- Sensitivity up to 30x higher than from a 1 cm<sup>2</sup> type spectrophotometer
- Detection limit to  $8 \times 10^{-6}$  AU
- Entire sample is immersed in the measurement beam; every molecule sees the same light.
- On the model 1000, spectra are captured at rates to 100/second
- Ask & answer questions which could not be addressed before

Examine the extents and rates of biochemical events in situ  
without disrupting the complexity of the live cellular environment.  
You'll learn more!



## The Five CLARiTY Models

**1000**

**1000:** The "fondest dream" for investigators working on enzyme kinetics, protein expression, blood research, microbe metabolism, algae photosynthesis, and more. Easily repurposed for stopped-flow spectrophotometry

**620**

**620:** First choice when neither rapid-scanning nor NIR are required. Spectral range 240-800 nm

**17**

**17:** Ideal for gold & silver nanoparticles, carbon nanotubes, fruit, meat, plant tissue, and more. Easily repurposed as a premium UV/Vis/NIR (185-2600 nm) for solution studies

**11**

**11:** Perfect for hemoglobin, mitochondria, and other samples active in the 400-650 nm region; full spectra acquired at rates to 2/ second

**VF**

**VF:** Specific to one or more distinct applications – protein, hemoglobin, or chlorophyll absorbance, or tryptophan fluorescence – when high sensitivity trumps fast spectral acquisition