

Multi-Angle

Wyatt Technology News

March 2014

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LSU Dates

THE ACCLAIMED LIGHT SCATTERING UNIVERSITY course, held in Santa Barbara, CA on the American Riviera, is guaranteed to de-mystify light scattering, work you hard but feed you well, and, of course, explain how to get the most from your Wyatt Technology equipment. [Enroll now!](#) The next available classes begin Apr. 8, May 13, June 10, Jul. 8, Jul. 22, and Aug. 19. Dyna-LSU classes begin Apr. 10, May 15, June 12, July 10, and Aug. 19. Check the full schedule at wyatt.com/LSU.

Regional User Meeting Dates

WASHINGTON DC REGION PROTEIN & BIOTECH USER MEETING – Apr. 30, 2014, in Gaithersburg, MD.

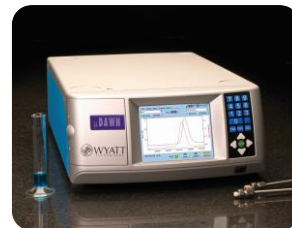
SOUTHERN CALIFORNIA REGION PROTEIN & BIOTECH USER MEETING – May 22, 2014, in Oceanside, CA.

MID-ATLANTIC REGION POLYMER & NANOPARTICLE USER MEETING – Sept. 16, 2014, in Wilmington, DE.

[Register here!](#)

Launch of the μ DAWN™

INTRODUCING... the first MALS detector for UHPLC! [Announced at PittCon](#) earlier this month, the μ DAWN brings all the benefits of MALS to those who need the advantages of less sample, less solvent, faster run times and better resolution than standard HPLC-SEC. The μ DAWN connects to the Optilab® UT-rEX™ for a complete μ SEC-MALS setup. [Our first app note](#) was recently released for publication. We expect to begin shipping in Q4 2014 – call now to reserve yours.



ILSC 2014

MARK YOUR CALENDARS and get ready for the next International Light Scattering Colloquium, scheduled for November 3, 2014. As always, this will be a prestigious event, featuring remarkable speakers discussing world-class science. The theme for 2014:

“LIGHT SCATTERING IN THE NANO WORLD”

Stay tuned, more to come...

San Francisco Bay User Meeting

LED BY WYATT'S NEW Northern California sales and support manager, Dr. Lucy Sun, about 40 light scattering aficionados convened at the Crowne Plaza in Burlingame on Feb. 20 to mark Wyatt's inaugural [San Francisco Bay Protein & Biotech Users' Forum](#). This was our very first regional/topical user meeting on the West Coast.

OUR MEETING BEGAN with Dr. Chris Broomell speaking on Antibody-Drug Conjugates and the characterization of drug-antibody ratio as well as aggregation. Chris has been particularly active supporting our customers in this rapidly growing field of interest and importance.

INTERACTIONS OF PROTEINS AT HIGH CONCENTRATIONS was the topic presented by Dr. Thomas Scherer of Genentech. With over a decade of experience utilizing Wyatt equipment, light scattering is Tom's

primary experimental tool for addressing this difficult analytical challenge.



THE MORNING ROUND TABLE DISCUSSIONS on ADC's, Formulation, Biophysical Characterization and Protein Science provided a welcome opportunity for informal discussions and networking. This and the PM session were also utilized to fill in gaps on ASTRA and DYNAMICS, ask about some odd chromatography effects, and in general button-hole Wyatt staff for extra support! Cont...

User Meeting cont.

OUR LAST SPEAKER BEFORE LUNCH was Zahira Begum, another Genentech scientist whose Wyatt SEC-MALS system is central to the workflow for quality control in a small-scale protein production facility.



MULTI-VALENT PROTEIN-LIGAND BINDING is another challenge readily taken on by light scattering. During lunch, Dr. Dan Some of Wyatt aided everyone's digestion with a session on how to design and analyze a CG-MALS experiment for such samples using a Calypso-DAWN system. Following Dan, Dr. Sigrid Kuebler, the head of Wyatt's Customer Service & Support, informed the audience of upcoming software releases as well as the impending arrival of the μ DAWN—the first MALS detector for UHPLC.

LIGHT SCATTERING IN A STRUCTURAL BIOLOGY LABORATORY was described by Dr. Sandro Vivona, formerly a post-doc in the lab of Axel Brunger at Stanford, now a scientist at Stem CentRx. In the final talk, Sigrid returned to present the DynaPro Plate Reader II as a versatile, high-throughput tool for formulation screening. The very last afternoon session consisted of small group discussions: SEC-MALS, FFF-MALS, CG-MALS, DLS and electrophoretic mobility via MP-PALS.

AT THE CLOSE OF A LONG, SATISFYING DAY, the majority of attendees encouraged us to "do this again"! You can certainly count on that, and please let us know if you'd like us to organize one of these meetings in your vicinity. [The next regional meetings](#) are scheduled for Gaithersburg, MD and Oceanside, CA (see side bar, page 1).



What's New at Wyatt

Short Courses

Wyatt Scientists will be giving short courses at the following upcoming meetings:

PEGS 2014

[Protein Aggregation: Mechanism, Characterization and Immunogenic Consequences](#) – Thurs., May 8th.

This short course will be given by Dr. Daniel Some, Wyatt Technology, in conjunction with Prof. Elizabeth Topp of Purdue University and Dr. Michael Marlow of Regeneron Pharmaceuticals

Molar Mass, Size, Conjugation and Interactions: Light Scattering Tools for Biophysical Characterization

A seminar in the PEGS regular program presented by Dan Some, Wednesday May 7th, at 12:40 PM.

IUCr 2014

We will hold a free workshop on "The Light Scattering Toolbox for Biomolecular Crystallographers" on Aug. 6, 2014 – Dr. John Champagne, Senior Application Scientist and Wyatt's Northeast Regional Manager. [Register here for the IUCr 2014 Workshop.](#)

Webinars

Available on demand: [A Light Scattering Toolbox for the Biophysical Characterization of VLPs](#)

Coming May 27: *A Light Scattering Toolbox for the Biophysical Characterization of ADCs*

Meet our New Field Representatives!

It is our pleasure to introduce two new regional sales and support scientists eager to help:



[Dr. Lucy Sun](#)

Northwest Regional Manager
Northern California to Washington State.



[Dr. Stephanie Cope](#)

Application Scientist, Mid-Atlantic Region
Stephanie focuses on Maryland, DC, Virginia and North Carolina.

Focus on: Allen P. Minton



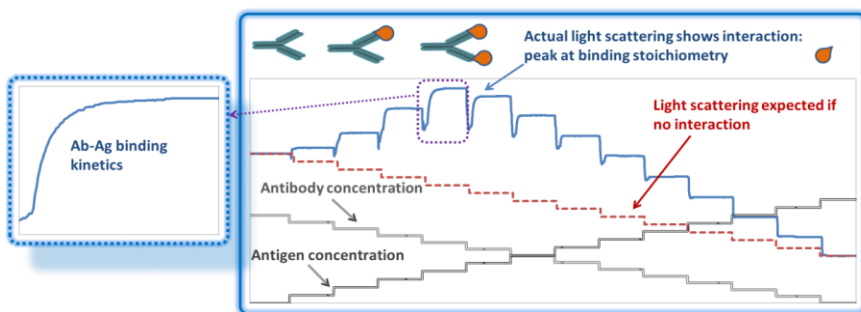
PROTEIN-PROTEIN INTERACTIONS (PPI), which give rise to much of the amazing complexity of biology, are in themselves deceptively diverse. The range of biologically relevant interactions spans at least 9 decades in affinity as well as a multitude of categories such as specific

vs. non-specific, self vs. hetero, monovalent vs. multivalent, cooperative vs. independent, steric vs. allosteric and more. Few scientists have been as instrumental in the quantitative study of PPI across that entire span as [Dr. Allen Minton](#), Senior Investigator in the National Institutes of Health. Dr. Minton carries out his research under the auspices of the National Institute for Diabetes and Digestive and Kidney Diseases (NIDDK), Laboratory of Biochemistry and Genetics, in the Physical Biochemistry Section. He is particularly interested in the impact on PPI of the diverse and crowded macromolecular environment found in the cellular medium (cytoplasm). Among the biophysical techniques that he employs are analytical ultracentrifugation (AUC), circular dichroism, fluorescence intensity and anisotropy, and of course light scattering.

ALLEN'S WORK COMBINES the relentless pursuit of solid science with a knack for inventing new twists on instrumentation. His expertise in applications of AUC to the characterization of PPI lead to several innovations in AUC technology and methodology, including micro-fractionation and tracer sedimentation. Recently his group developed a novel capillary viscometer aimed at deciphering colligative rheological phenomena.

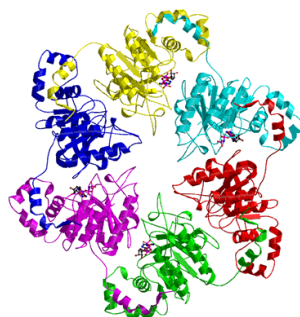
THE 'GOLD STANDARD' for characterizing PPI in solution was, for many years, AUC/sedimentation equilibrium (SE). Attending a seminar by Dr. Philip Wyatt on modern multi-angle light scattering (MALS) technology, Allen conceived of the light-scattering analog to SE: 'composition-gradient multi-angle light scattering', or [CG-MALS](#).

CG-MALS measurement of antibody-antigen binding. Each step consists of an injection of a new protein composition, indicated by the lower traces. The MALS signal reaches a maximum at the 1:2 stoichiometric ratio. The equilibrium data are analyzed to determine binding affinity and absolute molecular stoichiometry.



While the idea of using static light scattering to characterize PPI was not novel, Minton - along with his colleague A. Attri and additional co-workers - pioneered the combination of automated liquid handling with a sensitive Wyatt DAWN® MALS detector and new analysis algorithms that, for the first time, made CG-MALS a practical and robust technique. CG-MALS addresses a remarkable range of PPI and other macromolecular interactions without labeling or immobilization, providing equilibrium binding constants, absolute molecular stoichiometry and reaction kinetics.

COLLABORATION BETWEEN THE NIH GROUP AND WYATT R&D led to the commercial implementation of CG-MALS, the [Calypso®](#) system. Some of the theory and applications of CG-MALS were reviewed in a special edition of Biophysical Reviews, produced in honor of Allen Minton's 70th birthday ([this article is open-access and freely downloadable](#)).



AFTER DEMONSTRATING EXCELLENT AGREEMENT between SE and CG-MALS for ideal, specific protein binding, Allen went on to develop a practical theoretical framework for analyzing PPI in crowded (thermodynamically non-ideal) environments via CG-MALS. This theory was utilized in several experimental studies.

Altogether, 15 articles in the [Wyatt Bibliography](#) have been co-authored by Dr. Minton, amongst his complete list of 164 (his purely theoretical publications are not listed in the Wyatt Bibliography).

More recently, Allen has turned his attention to the benefits of high-throughput dynamic light scattering (DLS) for PPI analysis by means of the [DynaPro® Plate Reader II](#). A guest speaker at no less than two [International Light Scattering Colloquia](#) (2004 and 2009), we are honored to have Allen, as well as his post-doc Di Wu, present some of their latest light scattering PPI results at the upcoming [Greater D.C. Region Protein & Biotech Wyatt User Meeting](#) on April 30, 2014.

This Time It's Personal: Wyatt on Social Media

As a small, family-owned and operated company, we consider every customer to be part of the Wyatt Technology family. We do our best to get to know you first-hand; and, as a family, we like to keep in touch! Several [Social Media](#) channels help us accomplish this:



Wyatt Technology LinkedIn Company Page

Get the latest company news, read or write recommendations for our products and services. If Wyatt instruments have contributed to your success, let your colleagues know!



LinkedIn Groups

Ask your light scattering peers for advice, keep up-to-date with the latest Wyatt news, or reconnect with LSU classmates through our LinkedIn groups.



Wyatt Technology – open to anyone interested in the technology and applications of light scattering for characterization of macromolecules and nanoparticles in solution. Get the latest news, join in the technical discussions, post or find jobs for experienced light-scattering operators.



Light Scattering University Graduates – for active users of Wyatt products only. Besides open discussion, we will post important service information here such as firmware updates.

Check the [Social Media](#) page for information on topical discussion groups.

Career Opportunities at Wyatt Technology

The Scientist magazine recognized Wyatt Technology as one of the best places to work in the industry for the *fifth* consecutive year!



[Associate Application Scientist AAS Boston-0114](#)

[Associate Application Scientist Chicago Area AAS-0114](#)

[Application Scientist AS SB-1213](#)

[Software Development Engineer SDE-0314](#)

[Software Engineer SW-0114](#)

See wyatt.com/Careers for info and updates