



Charge Effects in HILIC

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Abstract:

All silica-based materials used for HILIC have ionizable functional groups. The electrostatic effects affect the retention of charged solutes. Adjustment of the pH or addition of salt suppresses these effects. Alternatively, they can be exploited to afford unique separations. Performance of HILIC on an ion-exchange column of the same charge as the solutes is a combination termed Electrostatic Repulsion-Hydrophilic Interaction Chromatography (ERLIC). ERLIC can be used for:

- 1) Isocratic separation of highly varied mixtures of peptides, amino acids and nucleotides;
- 2) The selective isolation of phosphopeptides and glycopeptides from tryptic digests;
- 3) Fractionation of unmodified peptides from complex tryptic digests superior to that obtained with SCX.

Charged solutes are highly oriented during migration through ERLIC columns. This results in appreciable sensitivity to the location of a charged group in a solute, such as the position of a phosphate group in a peptide.

About the Speaker:

Andrew Alpert received his doctoral degree from Purdue U. (Ph.D. 1980), working in the lab of Fred Regnier to develop the first ion-exchange materials for HPLC of proteins. Following postdoctoral research at Baylor College of Medicine, Dr. Alpert started PolyLC in 1985 to manufacture HPLC materials for difficult protein and peptide separations. The company specializes in developing new approaches to separation problems, such as the introduction of SCX for fractionation of tryptic digests in proteomics. Dr. Alpert first described Hydrophilic Interaction Chromatography (HILIC) in 1990 as a technique suitable for analysis of polar solutes in general, just as reversed-phase HPLC is suitable for nonpolar solutes. Current interests include: 1) Development of techniques for analysis of particularly difficult proteins, including histone variants and proteomics analysis of both membrane and nonmembrane proteins; 2) Mixed-bed ion-exchange columns for proteins; 3) HILIC of solutes on columns of the same charge (a variant called ERLIC), which permits isocratic separations of solutes differing greatly in composition such as amino acids and nucleotides. It also affords isolation and resolution of phosphopeptides and glycopeptides for proteomics analyses.

Location:
Christiana Hilton
100 Continental
Drive
Newark, DE 19713
Tele.302-454-1500
Directions:
See below

Times:
Executive Mtg - 5:00 pm
Social "Hour" - 5:45 pm
Dinner - 6:30 pm
Presentation - 7:30 pm

Cost of Dinner:
\$30 or MC/Visa /AmEx

NOTE TO STUDENTS: Full-time students with valid ID may attend dinner meetings at half price. **Faculty members at colleges and universities are urged to bring one or more students to the meeting. If they do, they also can attend at half-price.**

Dinner Choices: Breast of Chicken Dijonnaise, Salmon with Dill Cream Sauce, or Grilled Portabella Mushroom Tower with Spinach, Mushrooms, Onions, Tomatoes, Carrots, Zucchini and Peppers. Please specify choice of entree when making dinner reservations.

For Reservations:

Please register/call before 4 p.m., **Monday, March 22nd, 2010**. Please note that "no-shows" will be billed for the dinner.

Late reservations: We still want you to attend, so call now. However, we cannot guarantee your entrée selection for dinner.

Contact: We strongly recommend online registration <http://www.cfdv.org/> but you can also e-mail sheree@cfdv.org, or FAX 610-485-9467. For FAX/e-mail, please include your name, employer, work telephone & meal choice. Alternatively, call Ms. Sheree Gold at 610-485-3479 and provide same information.

Mark Your Calendar – Please see our website (<http://www.cfdv.org/>) for more details

- **CFDV Spring Symposium 2010: Chromatographic Advances for Complex Sample Mixtures – April 15, 2010**
- **NEW – Microfluidics and Microchip Technology Chromatography Short Course – April 14, 2010**
- **Introductory HPLC – May 10-12, 2010**
- **Gas Chromatography – May 17-19, 2010**
- **Advanced HPLC with LC/MS – June 7-9, 2010**

List of Officers – Please contact any officer for Forum information, to find out how to participate in the Forum or to find out how to participate in Forum Activities. The CFDV website is <http://www.cfdv.org/>.

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For Inclement Weather: Cancellations will be accepted up to **12:00 pm** on the day of the meeting. Call Ms. Sheree Gold at 610-742-4981. If the meeting is cancelled, you will be notified by **email** by 3pm.

Directions to the Christiana Hilton

From the North (Philadelphia, New York, New Jersey):

Follow I-95 South to Delaware. Take Delaware exit #4B (Churchman's Road). Bear right at the top of the exit ramp and proceed on Churchman's Road (Route 58) to the fourth traffic light. Make a left onto Continental Drive. The Hilton Wilmington / Christiana will be the first driveway on the left.

From the South (Baltimore, Washington, DC):

Follow I-95 North to Delaware. Take Delaware exit #4B (Route 7 North). Stay in the right-hand lane and proceed to exit #166 (Churchman's Road, Churchman's Crossing). Turn right at the bottom of the exit ramp (first traffic light), follow to the second traffic light, and make a left onto Continental Drive. The Hilton Wilmington / Christiana is the first driveway on the left.

<http://www.hiltonestate.com>