

Twelfth IDRC Conference – 2004

Chairman: Don Dahm



Memories of IDRC
Donald J. Dahm, General Chair, 2004

I first started coming to IDRC because I was interested in the "Theory of Diffuse Reflectance", and that was where it was talked about. At my first meeting (chaired by Jim Reeves) I gave a poster. I even jumped up during the discussion after a formal talk and wrote a formula on the board. (Try that at an ACS meeting.) At my second (chaired by Lois), I gave the first talk at the "Theory Session" (Peter Griffiths' session). At my third (chaired by Woody Barton), I chaired the corresponding session. At each, I ignored the CNIRS business meetings: after all that wasn't what I was interested in. That was fine, until Fred McClure was giving out a lifetime member award at the banquet, and he kept saying CNIRS instead of IDRC. That seemed screwy as could be to me, but when I asked Susan Foulk about it, she said, "That's just the name of the group that puts the conference on."

Since the rose smelled sweet even if it was called CNIRS, when Fred called for volunteers to join the CNIRS Governing Board, I told him that I had had a free ride long enough and it was time to give back to the best Conference that I had ever attended. When Emil was elected to be the Conference Chair, he asked if I would be willing to chair the Theory Session again. Well, guess what? He decided against a Theory session. Instead he said he needed an "old hand" to run the non-session related things. Little did I realize that his next step would be to nominate me as a candidate for being the next Chairman. Plus as it turned out, I had been unknowingly "campaigning" all week by manning the registration desk.

One of the great things for me about attending the conference was getting to meet (Conference Founder) Gerry Birth. He was one of my heroes, and

what he had written about the theory of diffuse reflectance seemed to make more sense than anything else I read. My first conference was his last, when his health was beginning to fail. When I tried to talk to him about his work on the theory of diffuse reflection, he just said: "That was a long time ago." Later, he and his son studied my poster carefully, in fact seemed to be the only people to pay any real attention to it. Gerry was impressed and asked his son to tell me that I should read a particular paper of his.

We decided to dedicate the 2004 Conference to Gerry. At the opening session, it was a great thrill to display Gerry's classic photographs that beautifully illustrate diffuse scatter far more effectively than formulas. (These may be seen in the book "Near-Infrared Technology in the Agricultural and Food Industries", edited by Phil Williams and Karl Norris.) At the banquet, Peter Griffiths was given the first ever Gerald Birth Award.

There was symmetry in this, because my first Conference was also the first time that I met Peter Griffiths in person. I had talked to him by phone, and we had "crossed swords" in JNIRS Letters. (In fact, the Conference was also the first time I saw those letters in print.) By time the 2004 Conference rolled around, we had pretty well ironed out our differences of opinion; hopefully, for the betterment of the discipline.

As I think about it, the reason that the Chambersburg Conference is so special to me is that it is the place that I have met people who were just names before. I have become part of a community, even though I often seem very alone in the work that I do. I have made friends who I will treasure forever,

In the brochure for the 2004 Conference, addressing folks who had never attended before, I said:

"For five relaxing, but stimulating, days, you can be eating leisurely meals and having discussions with people who may be novices or experts in their field. You can talk late into the night at the social hours. You will be made to feel welcome in the surroundings and traditions of small town America. You will be an object of envy, because wonderful as every Chambersburg meeting is, the first one will always be the one you remember most fondly."

I hope there is someone out there whose first Conference was 2004, and who will treasure the memories as I do of my first Conference.

THE
CHAMBERSBURG
MEETING
Aug 6-13, 2004

Your Personal Invitation

Members of the CNIRS invite you to join with us during the International Diffuse Reflectance Conference held at Wilson College in Chambersburg, Pennsylvania, USA. Chambersburg is only 30 miles away from historic Gettysburg, a memorial to the most ferocious battle of the Civil War.

Patterned after Gordon Conferences, the Chambersburg Meeting is the single most respected conference for NIR technology transfer. A clean, well equipped dormitory room, all meals and access to an indoor swimming pool, tennis courts and jogging/walking trails are all included as part of your \$500 registration fee. Members of the CNIRS get a 15% discount if they are members for 2003 & 2004.



AUG 6-7 *Symposia & Short Courses*

AUG 8 Conference Begins - 7:00 PM

AUG 9 NIR & Pharmaceutical - 8:30 AM
- 7:00 PM

AUG 10 NIR/Food & Agriculture - 8:30 AM
- 7:00 PM

AUG 11 Medical Applications - 8:30 AM
of Diffuse Reflectance - 7:00 PM

AUG 12 Advances in Diffuse - 8:30 AM
in Diffuse Reflectance - 7:00 PM

AUG 13 **Chromometrics** - 8 AM
MEETING ADJOURNS 12:00 NOON AUG 13

KEEP CHECKING OUR WEBSITE

<http://www.idrc-chambersburg.org>

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for
Near Infrared Spectroscopy
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The Council
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Near Infrared
Spectroscopy
(CNIRS)

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*Propagating NIR
Spectroscopy*

Throughout The World
SEE *The NIR Spectrum*
Our Web-NewsLetter
@
www.idrc-chambersburg.org
and
[www.pharm.uky.edu/
asrg/cnirs/cnirs.html](http://www.pharm.uky.edu/asrg/cnirs/cnirs.html)

Your Personal Invitation to join Your Colleagues in the Furtherance of the Goals of CNIRS

Membership Advantages

There are several advantages in becoming a member of the CNIRS. These include:

- 1, Technical/Social Interaction: You meet and talk with people who want to meet and talk with you, CNIRS plans to sponsor opportunities to gather socially with others in the NIR field,*
- 2, Discounts: Members in good standing (two years paid membership) get 15% discount on Registration Fees for the IDRC, up to \$50. Hence, if you plan to attend the IDRC, you should be a member. You get back more than your dues.*
- 3, Discounts: Members in good standing get 15% discount on the CNIRS Bibliography. This discount is not in addition to the 50% education institution discount.*
- 4, Peer Exposure: Members are encouraged to share their work; with their peers at the IDRC, through The NIR Spectrum (the Web-NewsLetter of the CNIRS), through the CNIRS forum and RoundTable,*
- 5. You have access to The NIR Spectrum and other CNIRS media. You can help with the newsletter by simply offering your suggestion to the Editor-in-Chief.*
- 6. Awards: Help CNIRS administer awards and compete for awards.*
- 7, Offices/Committees: Assist with the management of the affairs of the CNIRS and the IDRC by volunteering) for offices and committees.*

Membership Guidelines

You may become a member by sending \$20/year to:

*Susan Foulk, CNIRS Treasurer
128 N. Deer Run Drive
Lincoln University, PA 19352 USA*

CREDIT CARDS ACCEPTED

For Guidelines Contact:

Email: sfoulk@aol.com

Web: www.idrc-chambersburg.org

CNIRS Bibliography

The Council for Near Infra-red Spectroscopy maintains a bibliography of near infrared literature, including patents, covering NIR technology from 1800 to the present. This bibliography, utilizing the famous EndNote® search engine, current has over 23,000 citations. It is the single most complete bibliography of NIR technology in existence.

CNIRS, a nonprofit - all volunteer organization, utilizes profits from the sale of the bibliography to promote the advancement and practice of near-infrared spectroscopy internationally by sponsoring travel fellowship to the IDRC and awards in general. The bibliography currently sells for \$820 and comes with a licensed copy of EndNote. For more information please contact:

Fred McClure, Chr'm'n. Bibliography nirprofessor@nc.rr.com

The Council
for
Near Infrared Spectroscopy

IDRC-2004 Conference Schedule

August 6 -7 College dorm rooms available for Pre-Conference Attendees (and early arrivals)
August 7-8 Meals available in college cafeteria
August 7-8 **Pre-Conference Workshop**

Sunday, PM 2:00-7:30 PM Conference registration
Aug 8 7:30 PM Opening session of IDRC
9:00 PM Sponsor Presentations
9:30 PM Social Hour

M-F Mornings (Science Building Auditorium):

8:00 to 8:50 AM **Oral Summaries of Contributed Papers (Posters)**
8:50 to 9:00 AM Announcements
9 AM-12 Noon **Plenary Technical Sessions**

Afternoons:

Monday to Thursday Special Interest Sessions, Informal Discussions, Recreation, Relaxation
2:00 - 5:00 Mon to Wed Short course 1 (Davies, Fearn)
1:30 - 4:30 Thursday Short Course 2 (Hopkins)
4:15 Tuesday, Aug 10 CNIRS Business Meeting
4:15 Thursday, Aug 12 CNIRS Business Meeting (if needed)

Evenings:

7:30 - 9:00 PM Monday, Aug 9 to Wednesday, Aug 11 **Plenary**
Technical Sessions
9:00 - 9:30 PM Monday, Aug 9 to Wednesday, Aug 11 Sponsor Presentations
6:00 - 9:30 PM Thursday, Aug 12 CNIRS Banquet and Program
9:30 PM Social Hour, Laird hall

Friday, August 13 Conference Adjourns at Noon

Pre-Conference Workshop Program

Sessions held at Wilson College and Sheraton Four Points Hotel, Chambersburg, PA

Saturday, Aug 7 (Sessions at Hotel)

8:00AM - 12:00 Noon Online Chemical Process Analyzers
1:00 PM - 3:00 PM FDA Symposium on PAT
3:00 PM - 5:00 PM Panel discussion (FDA, USP, Workshop Participants)

Sunday Morning, Aug 8 (Session at College)

8:00 AM -12:00 Noon An Introduction to Chemometrics Tony Davies
and Tom Fearn

Sunday Afternoon, Aug 8 (Sessions at hotel)

1:00 PM - 3:00 PM Vendor Symposium on Non-Spectroscopic PAT Methods
3:00 PM - 5:00 PM Panel Discussion (FDA, USP, Vendors, Workshop
Participants)

IDRC Conference Program

Sunday Evening (7:30-9:00 PM): Conference Opening

Opening Address: Diffuse Reflections on Diffuse Reflectance - Karl H. Norris

The IDRC and the Theory of Diffuse Reflectance since Gerry Birth
Donald J. Dahm (Rowan University, Glassboro, NJ)

Invited Lectures

Monday: Pharmaceutical Applications Day

Morning (9:00 to Noon): Session Chair - Emil Ciurczak

The Influence of Spectral Resolution, the Detection Limit and other Peculiarities of Near-Infrared Spectroscopy
Heinz Siesler, Inna Gerber, Olga Kolomiets, Sven Borchert (University of Duisburg-Essen)

Strategies for Dealing with "Real-World" Challenges of NIR Qualitative ID Methods **Ron Rubinovitz** (Buchi Analytical).

Implementing PAT: An Industrial Case Study
James Drennen (Duquesne U)

Transfer of NIR Libraries and Sources of Method Variability
Katherine A. Bakeev and Bogdan Kurtyka (Foss Inc)

Quantitative Analysis via Qualitative Analysis
Howard Mark (Mark Electronics)

Afternoon (2:00 – 4:30): Image Analysis; Session Chair – Jack Carroll

Data Processing Strategies for NIR Hyperspectral Imaging Data
E. Neil Lewis (Spectral Dimensions)

Multi-Variant Image Analysis Processing
Carl Anderson (Duquesne U)

NIR imaging by single detector using Hadamard shutters
Robert Burling-Claridge (Ag Research, New Zealand)

Using NIR Imaging to Discriminate between Vegetal and Animal Tissues in Feed
Pierre Dardenne (CRA-W, Belgium)

**Evening (7:00 to 9:00): Current Developments of Near Infrared Spectroscopy
Along Traditional Lines (With an International Flair); Session Chair- Gary Ritchie**

Chemometrics Research From the Land of the Midnight Sun

Ralf Marbach (VTT Technical Research Centre of Finland)

NIR Research from the Far East

Aquaphotomics: Exploration into Biological World Trough Water/Light Interaction

Roumiana Tsenkova (Kobi University, Japan)

Research from the London School of Pharmacy NIR Centre of Excellence

A. C. (Tony) Moffat (University of London School of Pharmacy)

Tuesday, Aug 10: Food and Agriculture Day

Morning (9:00 to Noon): Commodities; Session Chair – Sandra Kays (USDA-ARS)

Bringing NIR Spectroscopists and Remote Sensing Scientists Closer Together

Graeme Batten (Charles Sturt University, NSW, Australia)

Moving from Laboratory to Field with NIR

Woody Barton (USDA-ARS)

Internet-Enabled Real Time Calibration Model Selection and Outlier Identification

Charles Hurburgh (Iowa State University)

Increasing Spatial Resolution of Measurement for Wood Properties

Laurie Schimleck (University of Georgia)

On-line NIR Characterization of Wood Chips at the Pulp Mill

Lars Wallbäcks (Wedometrics, Sweden)

Afternoon (2:00 – 4:00): Raman Spectroscopy; Session Chair – Mark Kemper

Raman and NIR: A Tale of Two Techniques

Mark Kemper (Kaiser Optical Systems)

Chemometric Predictions of Grain Flour Attributes Using NIR-FT/Raman Spectroscopy

Dave Himmelsbach (USDA),

Applications of Raman Spectroscopy in Pharmaceutical Product Development

Tom Cambron (P&G Pharmaceuticals),

Evening (7:00-9:00): Quality and Safety of Fresh Produce; Session Chair - Sandra Kays (USDA-ARS)

***In-vivo* NIRS for Animal Disease Diagnosis**

Roumiana Tsenkova (Kobe University, Japan)

Real Time Imaging of Poultry Carcasses for Food Safety

Bob Windham, Kurt Lawrence and Bosoon Park (USDA-ARS)

On-line NIR Spectrometry for Fruit and Vegetable Quality Assessment

Véronique Bellon-Maurel and **Sylvie Roussel** (CEMAGREF and AGROMETRIX, France)

Wednesday, Aug 11: Medical Applications Day

Morning (9:00 – noon):

Novel Technologies; Session Chair – Rob Lodder (Univ of Kentucky)

Temporal Augmentation of Diffuse Reflectance Spectroscopic Measurements

Dave Burns, Claudia Gributs, Francis Esmonde-White, and Dirk Bandilla (McGill University)

Wavefront Coding in Imaging

Paulo E. X. Silveira (CDM Optics, Inc)

Far-Infrared (Terahertz) Spectrometry and Imaging

Danielle Chamberlin (Agilent Technologies)

Terahertz Imaging

Jingzhou Xu and X.-C. Zhang (Rensselaer Polytechnic Institute)

Afternoon (2:00 – 4:30):

2004 Chemometrics Shootout: Session Chair - **Jim Reeves (USDA)**

Participants Describe Their Procedure for Solution of Posted Problem

Evening (7:00-9:00): Medical Applications; Session Chair - **Karl Norris**

Diffuse Reflectance Imaging Spectrometry Using Molecular Factor Computing

Rob Lodder (University of Kentucky)

**Reflection-Absorption Synchrotron Infrared Microspectroscopy in
Atherosclerosis and Aneurysm Studies**

David L. Wetzel (Kansas State University)

Application of NIRS in Plastic and Reconstructive Surgery

Mark Hewko (National Research Council, Canada)

Thursday, Aug 12: Honoring the Memory of Gerry Birth

Honorary Chairs – Doug Evans (Unity Scientific) **and Steven Birth**

Morning: Session Chair – **Phil Williams**

Memories of Gerry Birth Steven Birth (Gerry's son and attendee at our conference in 1996, the last year Gerry was here.)

An NIR Database is a Terrible Thing to Waste

Arnold Eilert (Unity Scientific)

**Mid-infrared DR Spectroscopy of Chemical Warfare Agent Simulants on Mineral
Surfaces** - Insights into the practical process of diffuse reflection

Peter Griffiths (University of Idaho)

A Novel Approach to 2DCOS

Tomas Isaksson (Agricultural University of Norway)

Making Cancer Cells Sing

Bill Fateley (Kansas State University) - withdrawn due to health

Evening (6:00 – 9:30 PM): CNIRS Banquet

Gerald S. Birth Award Lecture: Calibration and Collaboration

Peter R. Griffiths (University of Idaho)

Friday, August 13: Analyses in the Presence of Water

8:00 – 8:50 **Oral Summaries**

Development and Application of the Method “Seeing Through Layers”

Georgi Krivoshiev, et al. (Institute of Cryobiology and Food Technology - Bulgaria)

Comparison of Qualitative Mathematical Statistical Methods used for Distinguishing Melon Genotypes

Zsolt Seregély, Tamás Deák, György Dénes Bisztray, Károly J. Kaffka (Budapest University, Hungary)

9:00 - 11:15: **Analyses in the Presence of Water; Session Chair- Phil Williams**

Theoretical NIR Aspects of Water

Hideyuki Abe (Hokkaido, Japan)

Effect of Moisture on Calibrations for other Analytes

Phil Williams (PDK)

Determination of Organics at the ppm Level in Water

Susan Foulk (Guided Wave)

11:15 – 12:00: **Reprise of Pre-conference PAT Sessions – Emil Ciurczak**

12:00 Noon: **Conference Adjournment**