



Vicerrectoría de
Investigación
y Extensión



Rigaku OpenLab Colombia/Venezuela

October 27 – 31, 2014

Universidad Industrial de Santander

Sede Guatiguará, Bucaramanga, Colombia

Graciela Díaz de Delgado

Laboratorio de Cristalografía-LNDRX

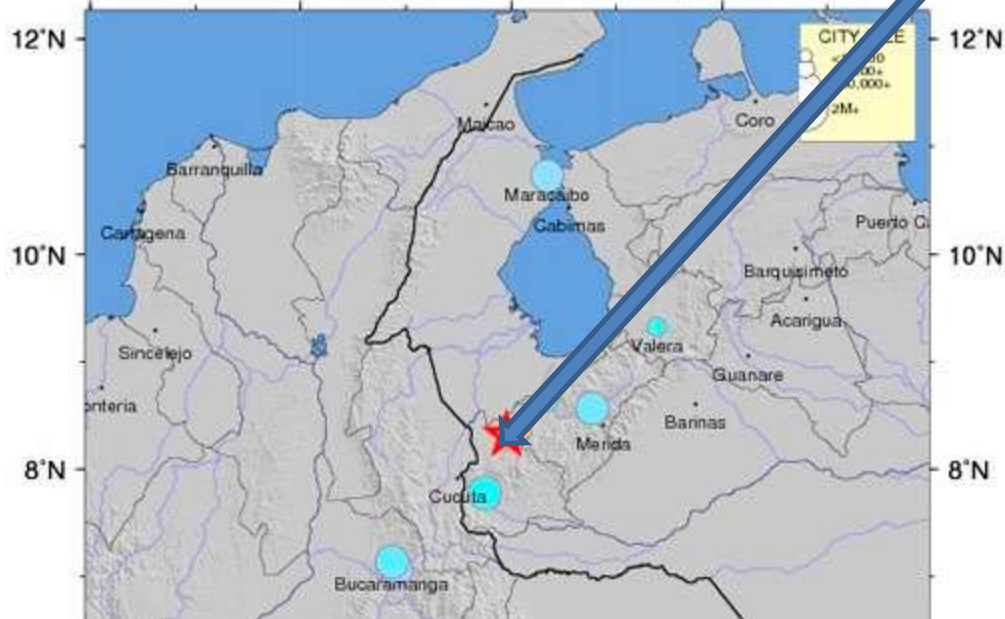
Universidad de Los Andes

Mérida – Venezuela



USGS Community Internet Intensity Map
TACHIRA, VENEZUELA

Feb 5 2015 04:21:49 AM local 8.3136N 72.0473W M5.6 Depth: 10 km ID:usc000tlui



Venezuela

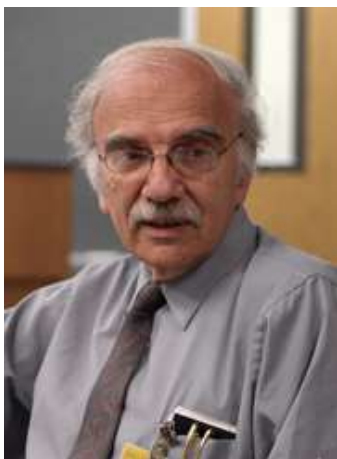
- Pedro Antonio Mora (1860-1945), Venezuelan chemist, founder of the Chemistry studies at the School of Engineering at Universidad Central de Venezuela (Caracas) in 1895.
- April 26, 1896 presents his design of an X ray tube which he used for medical purposes.



Museum of the National Academy of Medicine, Venezuela

Venezuela

- 1967: Argentinians L. Mario Amzel, Leopoldo Becka, Sergio Baggio, and Mario Capparelli worked at Escuela de Química, Facultad de Ciencias of Universidad Central de Venezuela (UCV), in Caracas.
- They supervised undergraduate degree thesis based on crystallographic work.
- Eldrys Rodulfo de Gil, worked at UCV until 1969 when she moved to Mérida to found the Crystallography Laboratory at ULA in the Chemistry Department. We celebrated our 45 anniversary last year.



Mario Amzel



Sergio Baggio



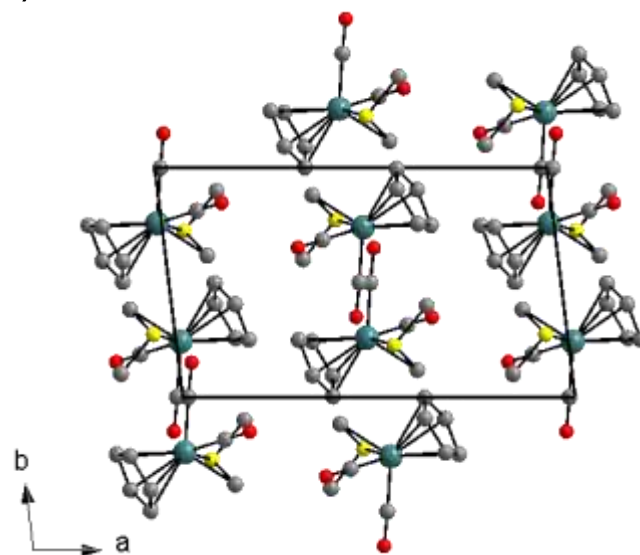
Eldrys R. de Gil

Venezuela

- Prof. Eldrys de Gil carried out M.Sc. and Ph.D. studies at University of Wisconsin with Prof. Larry Dahl.
- “Solid State Structure of Dinitrosyliron Iodide and Dinitrosylcobalt Iodide: The Stereochemical consequences of strong Metal-Metal interactions in ligand-bridged complexes”. L.F. Dahl, E. Rodolfo de Gil, R.B. Feltham. *J. Amer. Chem. Soc.*, **91**, 1953-1964 (1969).
- “The Molecular Structure of a Molybdenum (π -CH₂-SCH₃) Complex: Mo (π -CH₂-SCH₃)(CO)₂(π -C₅H₅)”. E. Rodolfo de Gil, L.F. Dahl. *J. Amer. Chem. Soc.*, **91**, 3751-3756 (1969).



Prof. Larry Dahl with a venezuelan crystallographer



Venezuela

- Prof. Gil participated in the *VIII International Congress and General Assembly of the International Union of Crystallography*, Stony Brook, USA, August 13-21, 1969.

Licenciado Degree Thesis Advisor:

- **Valentina Rivera:** “Estudio Estructural del Clorodinitrosilo de Cobalto”. (1972).
- Doctorate at Cambridge University, UK, from 1975 to 1978. Dr. George M. Sheldrick.

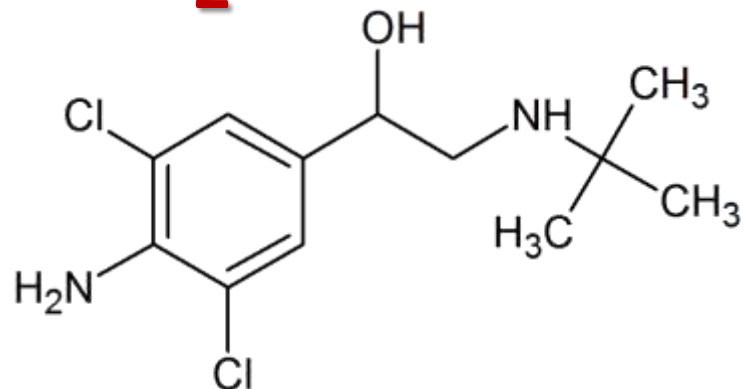
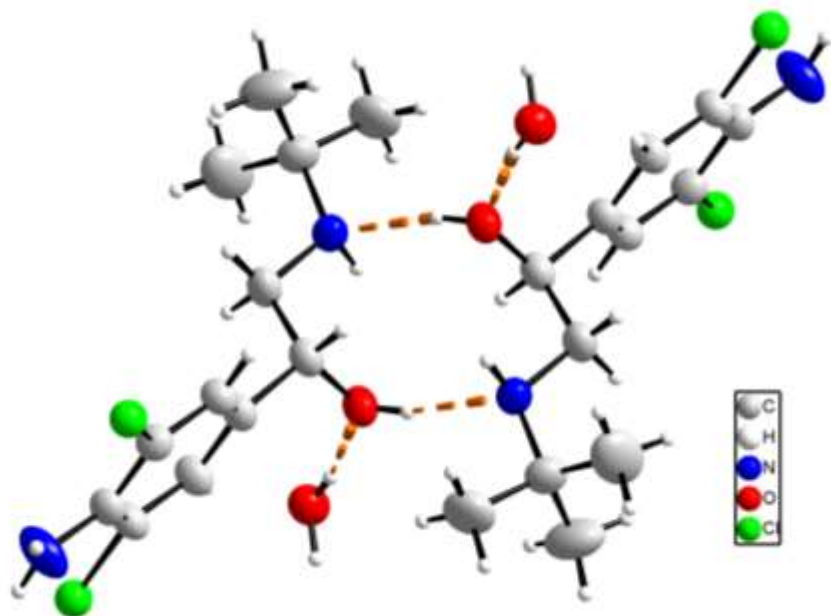


Prof. Valentina Rivera receiving an award in 1997 on her retirement.

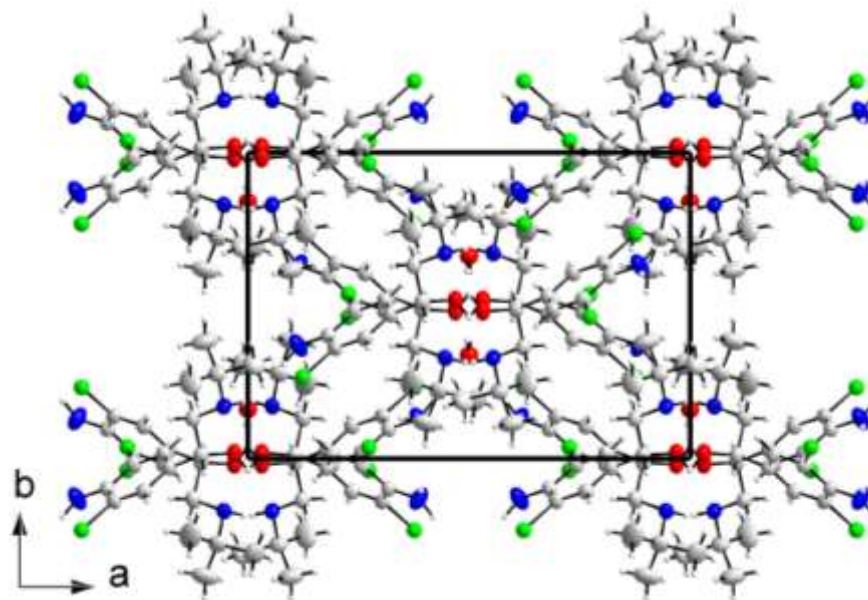
RESEARCH INTERESTS

- Semiconductors
- Natural Products
- Organometallic Compounds
- Organic Compounds
- Pharmaceutical Materials
- Service:
 - Geology Department – School of Engineering.
 - Oil Industry, Aluminum, and others.
 - Kidney Stones – University Hospital, Public Hospitals, Private Clinics.
 - Pharmaceutical companies.

Clenbuterol·0.5H₂O



R. Toro, J. Bruno-Colmenarez, G. Diaz de Delgado, J.M. Delgado.
Powder Diffr., (2013) 28(2), 63








UNIVERSIDAD DE LOS ANDES
FACULTAD DE CIENCIAS
DPTO. DE QUIMICA
MÉRIDA - VENEZUELA

CURSO TEORICO-PRACTICO SOBRE
Caracterización de Materiales Policristalinos
mediante Técnicas de Rayos X
24 AL 28 DE ENERO DEL 2000
CONICIT - PROGRAMA DE LABORATORIOS NACIONALES


LABORATORIO NACIONAL DE
DIFRACCION DE RAYOS-X
(LNDI-X)



School on Materials Applications of the Organic Solid State. Curso satélite del *International Conference on the Chemistry of the Organic Solid State (ICCROSS XVIII)*, 4 al 7 de Julio de 2007. Hotel Belesante, Mérida.



I Escuela Iberoamericana de Cristalografía and **XI Congreso Iberoamericano de Cristalografía**, September 2-8, 9-13, 1990.
Lab. de Cristalografía, Facultad de Ciencias, Universidad de Los Andes,
Mérida-VENEZUELA

The Group at Instituto Venezolano de Investigaciones Científicas (IVIC) – Caracas, VENEZUELA



1995: Purchased a Rigaku AFC7 Diffractometer.
2003: Upgraded the detector – Mercury.

“Curso Intensivo: Nuevos Avances en la Difracción de Rayos X de Monocristales”. 18 – 20 October, 2004.

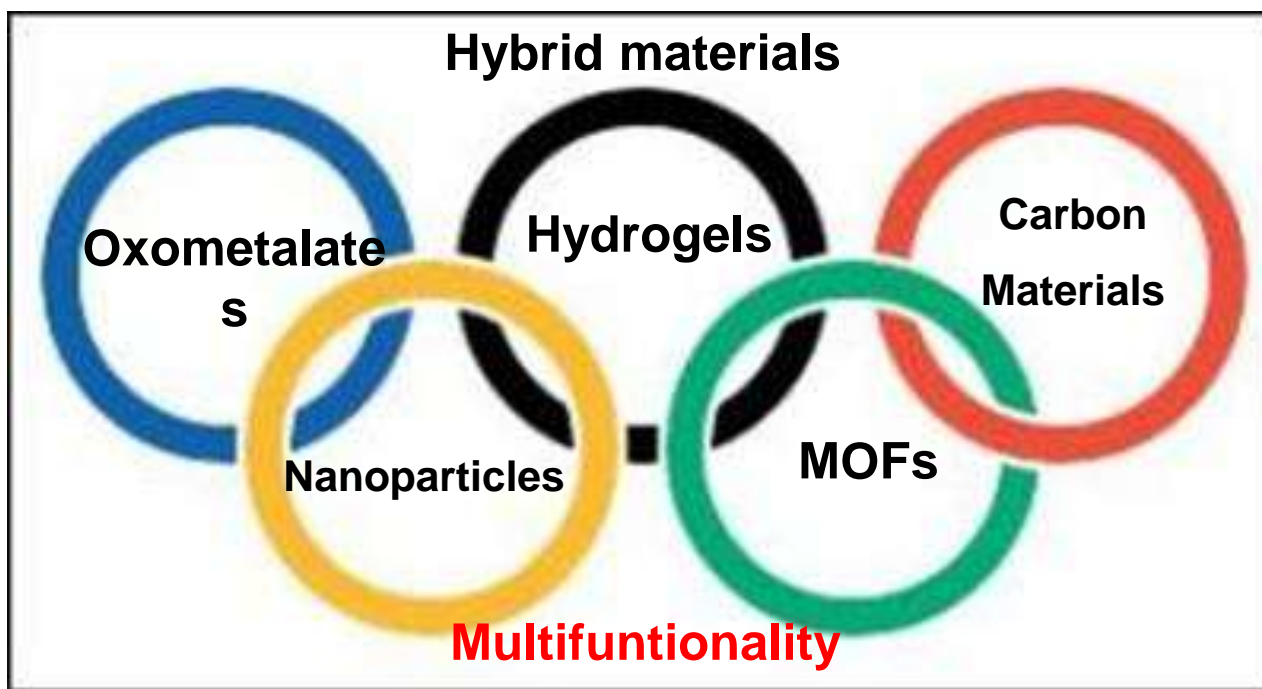
Centro de Química, IVIC, Caracas.

Organizers: Reinaldo Atencio,
Alexander Briceño, Teresa González



Research interest

❖ Material Design: To explore different approaches in order to design novel hybrid nano/microstructured materials with potential adsorbents or catalysts



Supramolecular Chemistry

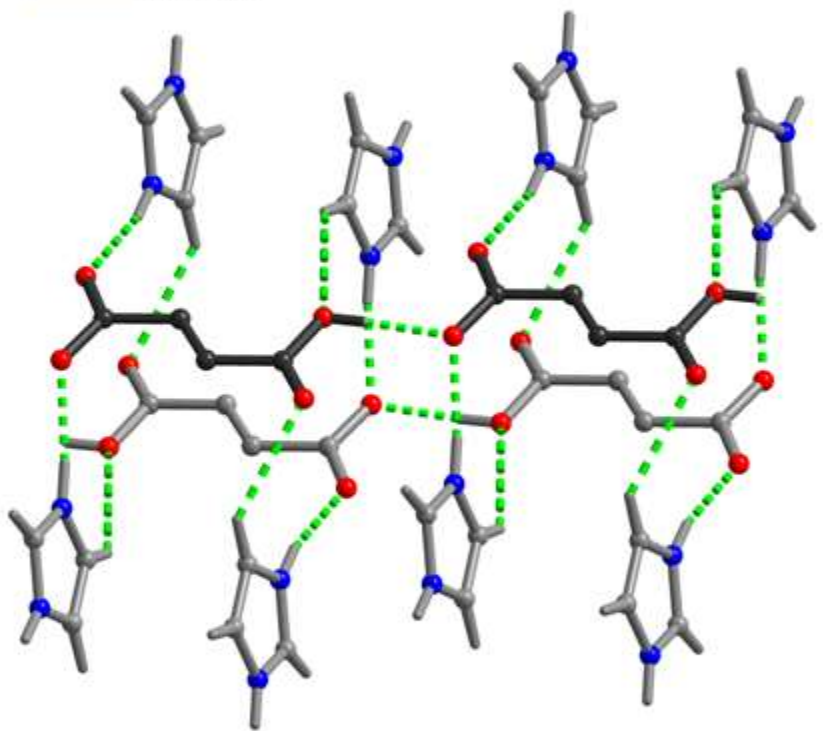
Modular assembly

Nanocasting

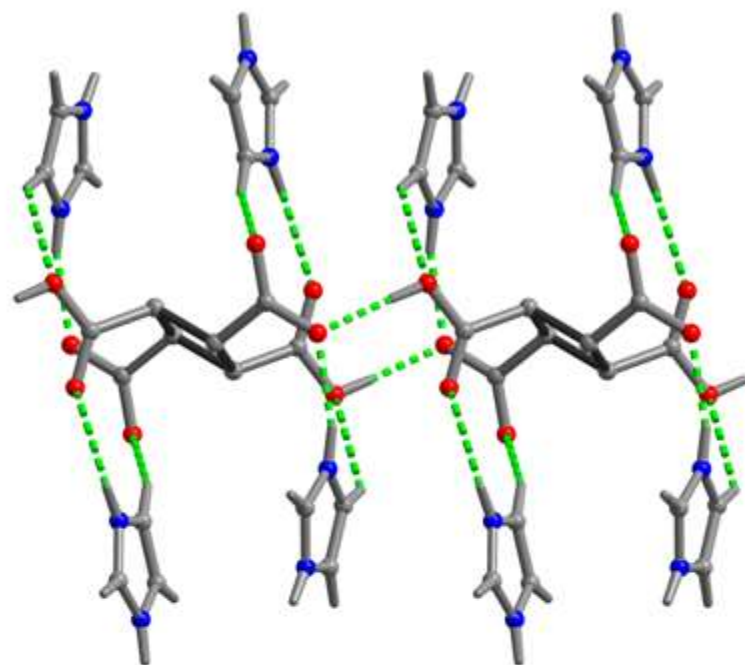
Crystal Engineering

Integrative Chemistry

Top-down/ Bottom-up



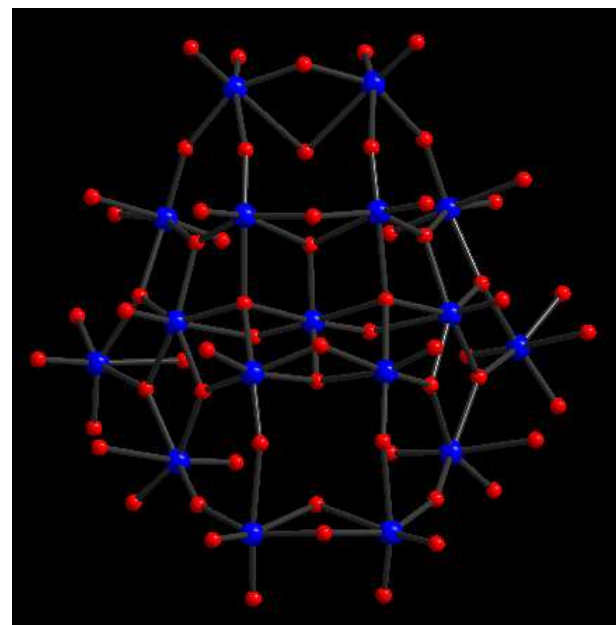
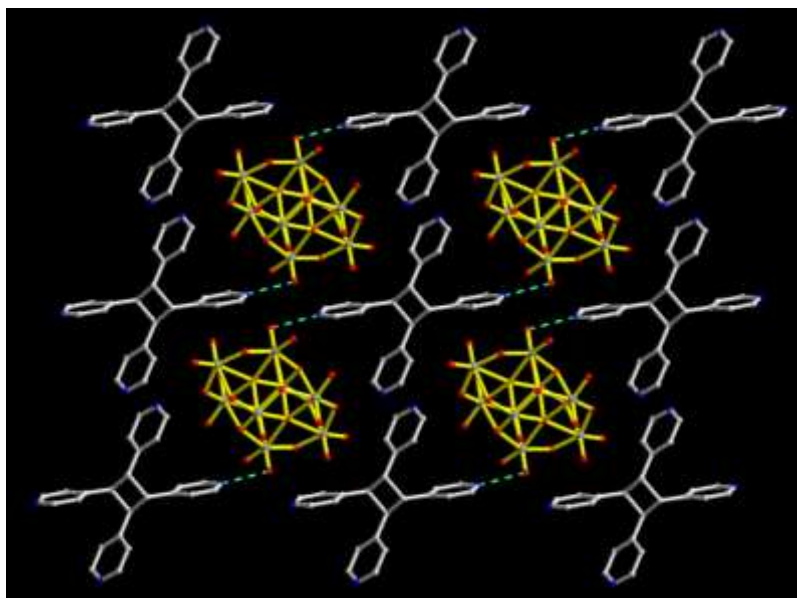
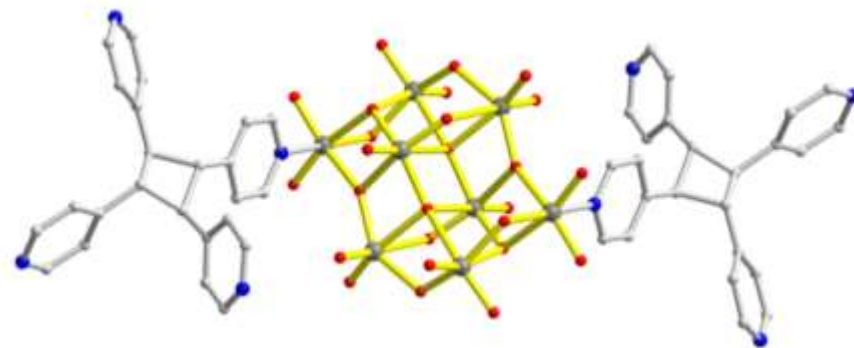
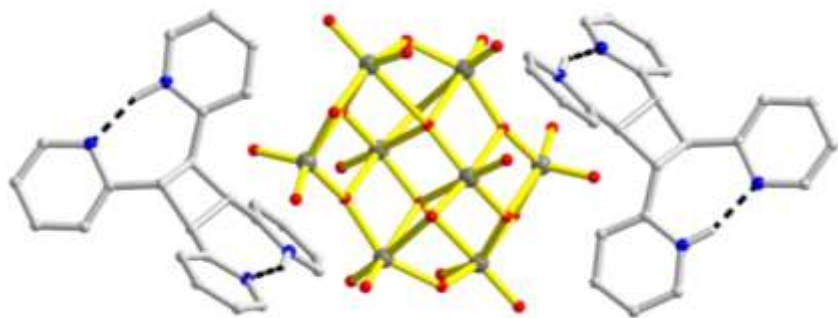
$h\nu$
Solid



$\Delta 190^\circ\text{C}$



Novel crystalline assemblies based on Polyoxometalates



The Group at INZIT and IVIC – Maracaibo, VENEZUELA

Centro de Investigación y Tecnología de Materiales (CITeMa)



Julia Bruno-Colmenarez, Miguel Angel Ramos, Luis Corredor, Reinaldo Atencio, Zailmar Morales



“Refinamiento Estructural mediante el Método de Rietveld”. 25 de Febrero al 1 de Marzo de 2013.
INZIT/IVIC – Maracaibo, VENEZUELA.

Centre for Research and Technology of Materials

Centro de Investigación y Tecnología de Materiales
(CITeMa)

Laboratory of Materials for Emergent Technologies

Laboratorio de Materiales para Tecnologías Emergentes
(LaMTE)

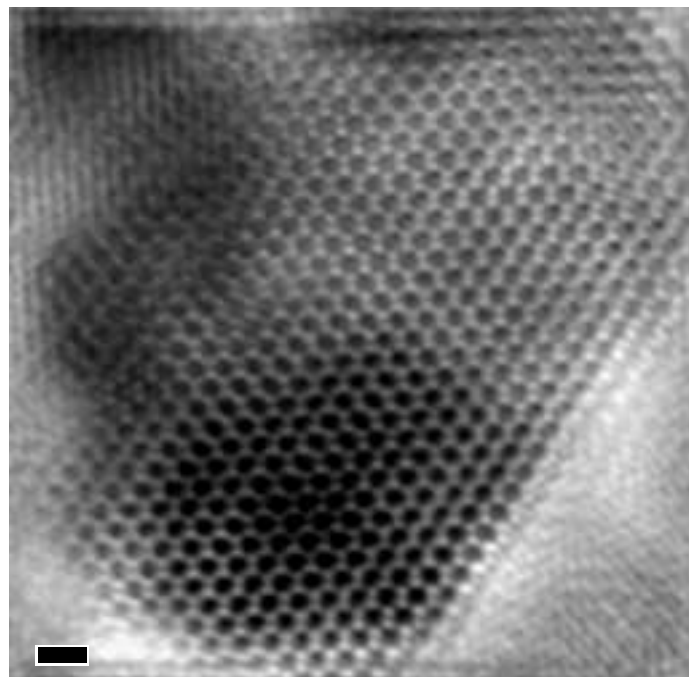
Research:

Development of carbon structured materials:

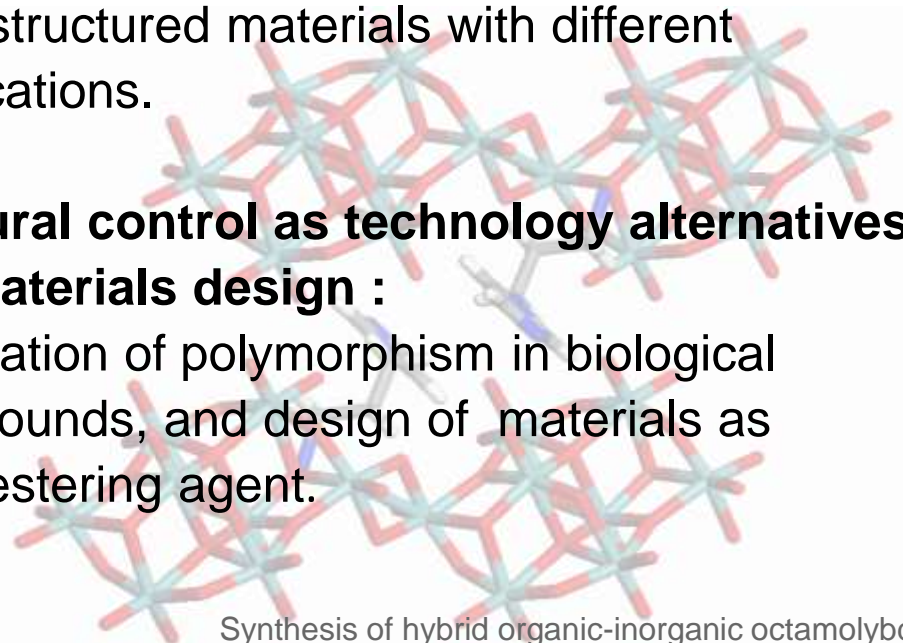
- Design, synthesis and modification of nanostructured materials with different applications.

Structural control as technology alternatives for materials design :

- Evaluation of polymorphism in biological compounds, and design of materials as sequestering agent.



Graphene sheet home made by CVD synthesis



Synthesis of hybrid organic-inorganic octamolybdates

Laboratory of Materials for Emergent Technologies *Laboratorio de Materiales para Tecnologías Emergentes* (LaMTE)



Miguel Angel Ramos, Zaillmar Morales,
Graciela Díaz de Delgado, Julia Bruno-
Colmenarez



José Arévalo, Julia Bruno-Colmenarez, Sabrina Acevedo, Zaillmar Morales,
Reinaldo Atencio, Yanpiero Balladores,
Ricardo Morales, María Villalonga, Jairo Mindiola, Herberto Briceño, Verónica
Hernández, Eric Plaza, Yuneira Mendoza, Miguel Angel Ramos.

Colombia

- Bucaramanga, SA. X-ray Laboratory, mid 1970: Dr. Jaime Pradilla, Edgar Páez, José Antonio Henao (since 1997).



The XIII Latin American Seminar of Analysis by X-ray Techniques (SARX-2012) November 18-23, 2012, in Hotel Tamacá El Rodadero, Santa Marta, Colombia



Bienvenidos al Rigaku OpenLab UIS Colombia IUCr – UNESCO

UIS SEDE GUATIGUARÁ, 27 AL 31 DE OCTUBRE DE 2014, PIEDECUESTA- COLOMBIA



Local Team and resources



UIS – Sede Guatiguará



The Organizers



G. Díaz de Delgado, Miguel Delgado, José Antonio Henao, Akihiko Iwata,
with Eric Reinheimer and Tomikatsu Kubo



The Instructors

Prof. José Antonio Henao (UIS, Colombia), Miguel Delgado and Graciela Díaz de Delgado (ULA, Venezuela), Eric Reinheimer (RIGAKU-USA), Alexander Briceño (IVIC, Caracas, Venezuela), and Belkis Ramírez (ULA, Mérida, Venezuela) .



Instructors

Teresa González (IVIC-Caracas), Rodolfo Moreno (Cali, Colombia), Reinaldo Atencio (IVIC-Maracaibo), Alexander Brideño (IVIC-Caracas) y Julia Bruno (IVIC-Maracaibo).



The Program



Programa de Actividades – Rigaku OpenLab
UIS-Sede Guatiguará, 27 al 31 de Octubre de 2014
Bucaramanga, Colombia



	Monday 27	Tuesday 28	Wednesday 29	Thursday 30	Friday 31
8:30 – 9:00	Instalación del Evento				
9:00 - 10:30	Fundamentos de Cristalografía M. Delgado	Registro y Reducción de Datos E. Reinheimer	Laboratorio y Discusión General	Análisis de Resultados/ Graficación A. Briceño	Análisis de Resultados/ Validación/CIF G. Díaz de Delgado
10:30 - 11:00	COFFEE BREAK				
11:00 - 13:00	Simetría y Grupos Espaciales B. Ramírez	Métodos de Determinación de Estructuras G. Díaz de Delgado	Laboratorio y Discusión General	Sesiones Prácticas y Ejemplos (Foto del Grupo)	Sesiones Prácticas y Ejemplos
13:00 - 14:30	LUNCH				
14:30 – 16:00	El Fenómeno de Difracción J.A. Henao	Refinamiento Estructural y Análisis A. Briceño	Laboratorio y Ejemplos	Ejemplos (Desorden/Maclado) E. Reinheimer	Presentación de Resultados
16:00 - 16:30	COFFEE BREAK				
16:30 - 18:30	Factor de Estructura y Métodos de Fourier A. Briceño	Programas de Computación y Bancos de Datos G. Díaz de Delgado	Laboratorio y Ejemplos	Ejemplos (Desorden/Maclado) E. Reinheimer	Presentación de Resultados CLAUSURA



Vicerrectorado de Investigación y Extensión



PARTICIPANTS

Thirty four students and young scientists from Colombia, Venezuela, Bolivia, and a young scientist from Costa Rica attended the lectures and practical sessions.



Practical Sessions



Programa de Actividades – Rigaku OpenLab
UIS-Sede Guatiguará, 27 al 31 de Octubre de 2014
Bucaramanga, Colombia



DISTRIBUCIÓN DE GRUPOS DE TRABAJO

Grupo A Sala de Juntas 1er. Piso	Grupo B Sala de Juntas 2do. Piso	Grupo C Aula 102	Grupo D Aula 103
Instructores			
Reinaldo Atencio Julia Bruno-Colmenárez	Alexander Briceño Teresa González	José Antonio Henao Belkis Ramírez Rodolfo Moreno Fuquen	Graciela D. de Delgado Miguel Delgado
Participantes			
Alvaro Andrés Amaya	Julián Ticona Cambi	Zaimaily Guillén	Lizaira V. Bello
Andrea Paola Aparicio	Javier Alonso Cuervo Farfán	Andrés Felipe León Rojas	Hernando Camargo
Jhon Deiver Bonilla Jaimes	Anelio José Dugarte Dugarte	Nory Johana Marino Ocampo	Ana Melissa Escalona
Valentina Cote	Cristian Camilo Garnica Ruiz	Diana Montagut	José Hernando Quintana
Jines Contreras	Estefany Hernández	Ronald Ríos Santacruz	Diana Vanessa Melo
Arianna Guillén	Rosa Carolina López Mendoza	Andrés Sánchez García	José J. Saavedra Arias
Marilia Guillén	Zulma Moreno Botello	Karen Ramírez	Diego Fernando Sánchez
Jean Wills Ramírez	José Luis Pinto Camargo	Robert Toro	Olgher Santodomingo Aguilar
	Cristian Rosas		Claudia Patricia Villamizar C.



Ministerio de
Investigación
y Extensión



Practical Sessions

Demonstrations on the use of the
Single Crystal Diffractometer
Dr. Eric Reinheimer (Rigaku)

Open access programs and
datasets were provided in a CD



SHELX, shelXLe, Olex2, Platon, Ortep, etc.
Six datasets







Presenting the Results

- Students were required to present in 15-20 minutes the results of the work on a dataset.

2014

año internacional de la
cristalografía

Rigaku OpenLab Colombia

27 – 31 Octubre 2014



 **Rigaku**

Media coverage



 **Rigaku**

X-ray Diffraction & Elemental Analysis



橋 **THE BRIDGE**
MATERIALS ANALYSIS eNEWSLETTER
NOVEMBER 2014, ISSUE 17



Vicerrectoría de
**Investigación
y Extensión**



ICDD
International Centre for
Diffractometry



ANDITECNICA
Andina de Tecnologías

- IUCr
- Vice-rectoría de Investigación y Extensión-UIS.
- Rigaku
- Anditecnica
- ICDD

- Laboratorio de Rayos X – UIS
- Laboratorio de Cristalografía – ULA, Fundacite-Mérida



Other activities carried out in Colombia and Venezuela as part of the IYCr

- Reorganization of ***Sociedad Venezolana de Cristalografía***:
 - Alexander Briceño, Miguel Delgado, Julia Bruno, Reinaldo Atencio, Gustavo Liendo, Graciela Díaz de Delgado.
- Reorganization of ***Sociedad Colombiana de Cristalografía***. In Progress.
- Movie: El Misterio de los Cristales Gigantes. Shown several times during the year.
- Special course “Difracción y Estructura de Materiales”. Facultad de Ciencias, Universidad de Los Andes. Mérida, June-July 2014.
- Course “Difracción de Rayos X en Muestras Policristalinas”, PDVSA-INTEVEP. Venezuela. October 8-10, 2014.
- Several activities were incorporated in undergraduate courses: crystal growth, Crystallography.
- 45th Anniversary of Laboratorio de Cristalografía in Mérida.

Future Activities in Colombia and Venezuela

- **2015 – 2016 Course on Powder Diffraction**
 - ❑ Explore venues – UIS-Colombia/Mérida-Venezuela.
 - ❑ ACA and ICDD – Support for Speakers
 - ❑ Easy access to Central America – Attract participants from this area.
- Continue to work on strengthening the Societies
- Museum exhibits
- Outreach activities
- Participate in ACA, LACA, IUCr, SARX.



2014 IUCr Investigación y Extensión

Bienvenidos al Rigaku Open

UIS SEDE GUATIGUARÁ, 27 AL 31

IUCr - UNEG

AGROPOSTALE
NEW YORK







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