



Departamento de Química Inorgánica, Analítica y Química Física

**Workshop "Retooling light" - DQIAQF (FCEN / UBA)**  
*20 hours with evaluation (oral presentations) for doctoral students*

*Day 1 (30.10.17, 9-13; afternoon open for discussion & networking)*

**Design and realization of photofunctional materials**

**PD Dr. Cristian A. Strassert**

(WWU Münster / Center for Nanotechnology / Center for Soft Nanoscience)

- Introduction to molecular photophysics
- Triplet vs. singlet states
- Spin-dependent reactivity
- Optoelectronics
- Theranostics

The absorption and emission of light will be described as well molecular relaxation processes leading to excited states with different multiplicities and lifetimes. Radiative and radiationless pathways will be introduced and put in the context of spin multiplicities, energy and electron transfer. On the basis of concrete examples and applications in optoelectronics and theranostics, main criteria for molecular design and structure-activity relationships will be presented.

*Day 2 (31.10.17, 9-13; afternoon open for discussion & networking)*

**Photons in medical imaging**

**Dr. Andreas Faust**

(WWU Münster / University Hospital Münster / European Institute for Molecular Imaging)

- Basics in medical imaging using  $\gamma$ -photons (PET and SPECT)
- Radiotracer development – from idea to human application
- PET- and SPECT-Imaging of bacterial infections using carbohydrates as example of current developments
- Optical Imaging
- Targeting

Starting with the basics of Positron Emission Tomography (PET) and Single Photon Emission Computed Tomography (SPECT) the physical and technical background using  $\gamma$ -photons in preclinical and clinical imaging will be presented. The used weak radioactive tracers are a result of long term development. The way from the initial medical question to the final clinical radiotracer for human application is characterized by a strong synergy of physics, chemistry and biology searching for the most appropriate compound in terms of sensitivity and specificity for the biological target. As an

Dr. Martin Negri  
DIRECTOR  
DEPTO. QUIMICA INORGANICA  
ANALITICA y QUIMICA FISICA



important example the specific imaging of bacterial infections will be discussed from the medical need and biological background to the current evaluation of developed radiotracers based on carbohydrates. In this context, small molecule targeting strategies as well as probes for optical images will be presented as well.

*Day 3 (01.11.17, 9-13; afternoon open for discussion & networking)*

**From photons to molecules: obtaining biological information from images**

**Prof. Dr. Hernán E. Grecco**  
(DF, FCEyN, UBA / IFIBA, CONICET)

- Resolution and contrast in fluorescence microscopy
- Biomolecular sensors
- FRET, FLIM and Correlation Spectroscopy Techniques
- Image analysis. Common pitfalls.

The course will provide an introduction to the quantification of biological observables from photophysical measurements with a special focus in microscopy techniques. After a brief introduction to the concepts of resolution and contrast in the context of fluorescence microscopy, we will discuss different strategies to obtain biological relevant quantities such as concentration, diffusion coefficients, interactions, conformational changes and post translational modifications. We will exemplify these strategies with relevant publications from cellular and molecular biology journals. We will conclude by providing an introduction on image analysis methods and discussing common pitfalls in their application.

*Day 4 (03.11.17, 9-13 & 14-18)*

**Networking and presentations by doctoral students and researchers**

- Morning: Reading papers and discussing the literature
- Afternoon: Presentations by doctoral students (15 min) and researchers (if demanded)
- Closing remarks & certificates of participation

Dr. Martín Negri  
DIRECTOR  
DEPTO. QUÍMICA INORGÁNICA  
ANALÍTICA y QUÍMICA FÍSICA



Universidad de Buenos Aires  
Facultad de Ciencias Exactas y Naturales

Referencia Expte. N° 507.611 vinc 02

Buenos Aires, 06 NOV 2017

VISTO:

la nota a foja 1 presentada por el Dr. Martín Negri, Director del Departamento de Química Inorgánica, Analítica y Química Física, mediante la cual eleva la información del curso de posgrado **RADIACIÓN ELECTROMAGNÉTICA COMO HERRAMIENTA EN MICROSCOPIA, MEDICINA Y OPTOELECTRÓNICA / RETOOLING LIGHT (WORKSHOP)**, que será dictado del 30 de octubre al 3 de noviembre de 2017 por la Dra. Gabriela Lagorio, el Dr. Cristian Strasser, el Dr. Hernán Grecco y el Dr. Andreas Faust,

CONSIDERANDO:

lo actuado por la Comisión de Doctorado

lo actuado por la Comisión de Posgrado

lo actuado por la Comisión de Presupuesto y Administración,

lo actuado por este Cuerpo en Sesión Ordinaria realizada en el día de la fecha,

en uso de las atribuciones que le confiere el Artículo N° 113° del Estatuto Universitario,

EL CONSEJO DIRECTIVO DE LA FACULTAD DE  
CIENCIAS EXACTAS Y NATURALES

**RESUELVE:**

**Artículo 1°:** Rectificar el art. 4° de la Resol. CD. N°2291/17 el cual quedará redactado de la sig. manera:  
Aprobar un arancel de 2000 mod. y eximir del pago del arancel a los alumnos reg. de Doctorado de Univ. Nac. y Públicas.

**Artículo 2°:** Comuníquese y a la Biblioteca de la FCEyN, con fotocopia del programa incluida.

**Artículo 3°:** Comuníquese a la Dirección del Departamento de Química Inorgánica, Analítica y Química Física, a la Dirección de Movimiento de Fondos, a la Dirección de Presupuesto y Contabilidad, a la Dirección de Alumnos y a la Secretaría de Posgrado. Cumplido archívese.

Resolución CD N°

2653

SP/caf/09/10/2017

X  
Dr. PABLO J. FERRAZ  
Secretario Asesor de Presidencia  
FCEyN - 3163

Dr. JUAN CARLOS REBOREDA  
DECANO