

Comunicazioni dalla SIBPA

In memoriam : Giacinto Scoles

Cari amici e colleghi

È con grande nostalgia e affetto che ricordiamo Giacinto Scoles, che ci ha lasciato dopo avere combattuto coraggiosamente per molti anni con una malattia debilitante e ingiusta.

Per noi che lo abbiamo conosciuto e avuto vicino nei nostri anni più produttivi o più formativi, ma anche per il mondo scientifico intero, Giacinto Scoles è stato uno dei più importanti chimici italiani degli ultimi 50 anni, non solo per le sue ricerche di altissimo livello e impatto in Italia, Europa, Canada e USA, ma soprattutto per la sua visione unica, coraggiosa, perseverante e instancabile, contagiosa in modo innato e senza confini.

La sua ricerca ha spaziato dall'elio superfluido e la fisica delle basse temperature, alla spettroscopia di cluster di He, ai fasci supersonici, alla diffrazione di He, ai self-assembled monolayers, alla crescita di film sottili di molecole organiche, alle nuove tecniche di nanofabbricazione fino alla nanomedicina.

È sempre stato all'avanguardia, in tematiche di frontiera della chimica, fisica e recentemente nella ricerca di diagnosi e terapie efficaci in nanomedicina. Ha formato decine di ricercatori di livello internazionale a cui ha insegnato la grande bellezza della ricerca, di quella difficile che non si risolve se non con una collaborazione tenace all'interfaccia di diverse discipline e superando qualsiasi ambito disciplinare. Quando a 75 anni, Giacinto fonda un nuovo centro di nanomedicina a Udine lo fa grazie a un Advanced Grant ERC, con l'obiettivo urgente di fare la differenza per nuove terapie oncologiche. Quello che ha fatto la differenza è stata sicuramente la sua energia inesauribile, che Giacinto ha sempre trovato il modo di trasmettere a tutti e soprattutto ai suoi giovani collaboratori, a chi ha avuto il privilegio di crescere e diventare uno scienziato al suo fianco.

Tutti coloro che hanno avuto il privilegio di conoscere Giacinto Scoles lo ricorderanno per le sue straordinarie qualità scientifiche, la capacità innata di trasmettere entusiasmo per la scienza, e per la sua empatia nell'instaurare rapporti umani profondi. Per Giacinto Scoles intuizione, libertà di idee e partecipazione (la citazione a Giorgio Gaber era sua) sono stati gli assi portanti della sua vita scientifica e non solo. Lascia una grande eredità a tutti coloro che lo hanno incontrato e che, attraverso l'educazione delle nuove generazioni di studenti,

possono continuare a trasmettere le sue idee e i suoi principi.

In questo triste momento, ci uniamo alla moglie Giok-Lan e alla figlia Gigi con commozione e affetto.

Maurizio Prato, Loredana Casalis, Marcella Bonchio, Francesca Toma e Fabio Biscarini

Courses and Schools

School : Shaping light in space and time for biomedical imaging

Ettore Majorana foundation and centre for scientific culture international school of solid-state physics, 89th course

Erice, Sicily (Italy) 14 – 20 May 2025

The aim of our school is to bring together leading experts, researchers, and scholars in the field of biomedical optical imaging to share their knowledge, insights, and the latest advancements in shaping light in time and space for biomedical applications.

The Ettore Majorana Institute, nestled in the picturesque village of Erice, serves as the venue for the school. It offers an idyllic setting conducive to collaborative learning, stimulating discussions, and valuable networking opportunities. The center will fully cover lodging and meals in a single room with a private bathroom at one of the four monasteries in Erice. Additionally, transfers from Palermo or Trapani airports to Erice (approximately a one-hour drive by private car) will be provided.

The participation fee is **900 Euros**, covering all the expenses apart from the travel expenses to reach either Palermo or Trapani. Shuttles from the two airports will be organized for the arriving and departing days.

Invited speakers

Rainer Heintzmann, Univ. Jena (D)

Alberto De Castro, CSIC, Madrid (E)

Alba Panigua Diaz, Univ. Murcia, Murcia (E)

Hilton De Aguiar, Ecole Polytechnique, Paris (F)

Chiara Stringari, Ecole Polytechnique, Paris (F)

Alexander Jesacher, Medizinische Universität, Innsbruck (A) Llangyi Chen, Peking University, Peking (CN)

Hervé Rigneault, Institut Fresnel Marseille (F)

Andrea Curatolo, Politecnico di Milano (I)

Raluca Niesner, DRFZ, Berlin (D)

Adrian Podoleanu, Univ. of Kent, UK

Jacopo Bortolotti, Univ. of Exeter, UK

Ilaria Testa, Karolinska Inst., Stockholm (S)
Ana Batista, Univ. of Coimbra (P)
Mario Marini, Univ. Milano-Bicocca, Milano (I)
Paolo Pozzi, Politecnico di Milano (I)

Topics

- Adaptive Optics in microscopy
- Biomedical imaging of the eye
- Coherent Raman microscopy
- Computational imaging in complex media – Computational Raman microscopy
- Eye Physiology and Ocular Aberrations - In vivo imaging
- Label free functional imaging
- Optical Coherence Tomography
- Structured illumination
- Second harmonic generation microscopy – Super-resolution live-cell imaging
- Three-photon microscopy
- Wave front sensing and correction

Course Directors: A. Bassi (Politecnico di Milano) – J. M. Bueno (Univ. Murcia) - G. Chirico (Unimib) Director of the School: G. BENEDEK President of the Foundation: A. ZICHICHI

Contact: contacts@in2sight.eu

News from EBSA

HERCULES 2025 - European School

2025 session: 9th March - 12th April, 2025

DEADLINE FOR APPLICATION: 6 October 2024

HERCULES is a European course for PhD students and young researchers using **Neutrons and Synchrotron Radiation** for applications in **Biology, Chemistry, Physics, Hard & Soft Condensed Matter**.

The 5-week school includes **lectures** (60%), **hands-on practicals, labs & tutorials** (30%), visits, a poster session, group work sessions, ...

Participants will spend one week in a partner institution in Europe among:

ALBA in Barcelona, Spain

PETRA III and EU-XFEL in Hambourg, Germany

KIT light source in Karlsruhe, Germany

SOLEIL in Saint-Aubin, France

This comes in addition to practicals, labs, and tutorials which will take place in Grenoble at **ILL, ESRF** and Grenoble Laboratories (**CNRS, IBS**).

The school includes a common part and two parallel sessions:

- ***Physics and chemistry of condensed matter (session A)***

- ***Biomolecular and soft condensed matter (session B)***

The school will be held in an hybrid format. Thus, a part-time online participation is also possible, consisting only in following online the lectures held in Grenoble during weeks 1, 2, 3 and 5.

Why join Hercules?

- to **learn new techniques using neutron and synchrotron radiation**

- to expand your **theoretical** and **practical** knowledge, *not only for your present research but also for your scientific career*

- to **experiment these techniques** on world-class instruments & beamlines

- to **build a network of relations** with fellow young researchers and experienced teachers from all over the World

Bursaries/reduced costs

- A limited number of fellowship grants will be available to reduce registration fees

Full list of lectures: <https://hercules-school.eu/general-programme> (with links to the dedicated pages)

[Download the full 2024 Booklet \(lectures, practicals...\)](#)

Contact email: hercules@hercules-school.eu

Postdoctoral Research Fellow – Computational Biophysics

We are looking for a postdoc to help kickstart the research of the newly established BioInterfaces group at the Computational Physics Laboratory at Tampere University (Tampere, Finland).

The group uses molecular dynamics simulations to study the structure and dynamics of complex lipid membranes and the effects of this complexity on membrane proteins. We are also active in developing simulation models for the lung surfactant, as well as in other model and method development. The project(s) will be tailored to the skills and interests of the hired person.

The group has access to the excellent computational infrastructure in Finland (<https://lumi-supercomputer.eu/>), and collaborates with numerous national and international teams covering theory, simulations, and various flavours of wet lab experiments.

The closing date is October 10th. The applications are to be submitted through the recruitment portal, which you can access at the bottom of the linked site.

Best Regards,
Matti Javanainen

PhD position: Single cell bacterial electro-mechanics and surface sensing

Supervisor: Ashley L Nord ashley.nord@cbs.cnrs.fr
Centre de Biologie Structurale (CBS), CNRS, Montpellier

Location: Montpellier, France

Degree required: Masters or equivalent

The position

We are looking for a strong and motivated candidate to fill one PhD position (3 years) in the group 'Physics and mechanics of biological systems' at CBS Montpellier, France. Our project probes the physics of bacterial electro-mechanics, the dynamics of bacterial proton motive force and membrane potential, and the relation to surface sensing and biofilm formation, all from an experimental biophysics perspective.

Activities

- single cell brightfield and holographic microscopy of bacterial cell
- fluorescent microscopy
- image analysis, time series analysis
- single-molecule biophysics
- programming
- theoretical modeling
- wetlab activities and cell/molecular biology (bacteria)

Context of the work

Most our knowledge of bacteria comes from studies of independent swimming cells. Yet, most bacteria on earth are found in non-motile aggregated communities, called biofilms, which bear little resemblance to their motile counterparts. Biofilms are acutely resistant to antibiotics, extremely difficult to eradicate, and are implicated in important global challenges, from deadly infections and antimicrobial

resistance to food safety and water security.

Under the current paradigm, biofilms begin when a motile cell adheres and senses a surface, triggering a change in 'lifestyle'. But, this crucial nucleation step remains poorly understood: what mechanical, chemical, or electrical signal underlies surface sensing?

Electro-chemical gradients established across biological membranes are fundamental in the bioenergetics of all forms of life. Of particular importance are protons, which are continuously pumped across the bacterial membrane to create an out-of-equilibrium gradient, termed Proton Motive Force (PMF), measured in Volts, which in turn is used by several cellular mechanisms. The PMF powers the Bacterial Flagellar Motor (BFM), the mechanical rotary motor complex at the base of each flagellum, responsible for bacterial swimming and chemotaxis. In many species of bacteria, the BFM is believed to play a crucial role in surface sensing and biofilm formation.

In this project, we will combine state-of-the-art biophysical experimental techniques with a rigorous theoretical treatment of the electro-mechanics of the system, with the aim of perturbing and probing the PMF on single bacterial cells, quantitatively understand the dynamics of the PMF and the BFM, and understand the potential role of the PMF in bacterial surface sensing.

This is a project co-led by Ashley Nord and Francesco Pedaci, two PI's within the 'Physics and Mechanics of Biological Systems' team. The team is highly interactive and dynamic, and the candidate will have the opportunity to collaborate on other ongoing projects within the team, depending on their interests. The Center for Structural Biology (CBS) is an interdisciplinary and international research institute located in Montpellier, France. It is comprised of 13 research teams with a mix of biophysics, bioengineering, and structural biology. Their expertise spans a vast range, including cutting-edge optical microscopy techniques, optical and magnetic tweezers, atomic force microscopy, NMR, X-ray crystallography, bioinformatics, bioengineering, and biomolecular modelling. It is home to many PhD students and postdocs of diverse backgrounds and nationalities.

Applications will be reviewed on a rolling basis until the position is filled. There is no deadline.

Start date

Oct 1, 2024, or thereafter. For excellent candidates, there is flexibility in the position start date.

Postdoc position: Digital Holography to uncover the Physics of Bacterial Biofilm Formation

Supervisor: Ashley L Nord ashley.nord@cbs.cnrs.fr
Centre de Biologie Structurale (CBS), CNRS, Montpellier

Location: Montpellier, France Degree required: PhD or equivalent Desired experience: 0 - 4 years

The position

We are looking for a strong and motivated candidate to fill one postdoc position (1 year renewable, multi-year funding) in the group 'Physics and mechanics of biological systems' at CBS Montpellier, France. Our project probes the physics of bacterial motility and biofilm formation from an experimental biophysics perspective.

Activities

- digital inline holography and computational reconstruction of holograms
- light sheet microscopy, TIRF microscopy, fluorescent microscopy
- microscope design and construction
- machine learning, artificial intelligence applied to holographic reconstruction and cell tracking
- image analysis, time series analysis

- single-molecule biophysics
- programming
- theoretical modeling
- wetlab activities and cell/molecular biology (bacteria)

Context of the work

Most of our knowledge of bacteria comes from studies of independent swimming cells. Yet, most bacteria on earth are found in non-motile aggregated communities, called biofilms, which bear little resemblance to their motile counterparts. Biofilms are acutely resistant to antibiotics, extremely difficult to eradicate, and are implicated in important global challenges, from deadly infections and antimicrobial resistance to food safety and water security.

Under the current paradigm, biofilms begin when a motile cell adheres and senses a surface, triggering a change in 'lifestyle'. But, this crucial nucleation step remains poorly understood: what mechanochemical signal underlies surface sensing? Moreover, many natural biofilms, including many that cause chronic infections, exist in absence of a substrate, suggesting that biofilms can nucleate via multiple mechanisms. Can nucleation be understood, not as a biochemical switch of an individual, but as an emergent behavior of active colloids?

By developing a unique setup which combines digital holographic microscopy and light sheet microscopy, this project seeks to capture and resolve rare nucleation events, and the resulting physiological response, thereby uncovering the physical mechanisms of biofilm initiation in various microenvironments.

This is a new project and new line of research led by a young PI, Ashley Nord, funded by the Foundation Bettencourt Shueller Impulscience award (for 5 years). Ashley is a part of the 'Physics and Mechanics of Biological Systems' team, comprised of three permanent CNRS researchers, all with a background in physics and biophysics. The team is highly interactive and dynamic, and the candidate will have the opportunity to collaborate on other ongoing projects within the team, depending on their interests. The Center for Structural Biology (CBS) is an interdisciplinary and international research institute located in Montpellier, France. It is comprised of 13 research teams with a mix of biophysics, bioengineering, and structural biology. Their expertise spans a vast range, including cutting-edge optical microscopy techniques, optical and magnetic tweezers, atomic force microscopy, NMR, X-ray crystallography, bioinformatics, bioengineering, and

biomolecular modelling. It is home to many PhD students and postdocs of diverse backgrounds and nationalities.

Applications will be reviewed on a rolling basis until the position is filled. There is no deadline.

Start date

Oct 1, 2024, or thereafter. For excellent candidates, there is flexibility in the position start date.

Postdoc position on protein biophysics

A postdoc position is open in Giorgio Schiro lab at the Institute for Structural Biology to develop an experimental approach for the determination of the photoinduced structural dynamics of photosensitive biomolecules *in vivo* using time-resolved X-ray scattering techniques.

Here the link to apply:

<https://emploi.cnrs.fr/Offres/CDD/UMR5075-VALLAN-031/Default.aspx?lang=EN>

Contact: giorgio.schiro@ibs.fr

SIBPA

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