



Nano2Life External Newsletter

Dear reader,

welcome to the latest issue of Nano2Life's external newsletter in 2007. Here you find the latest information about what is going on in our network, important events and job offers from Nano2Life partner organisations.

Happy Reading!

The editors

Comments and contributions to n2l@bioanalytik-muenster.de

news and activities

[Video Website - First Page of N2L's Public Website](#)
[Nano2Life Summer School on Nanotech and Nanobiotech in Athens](#)
[ELSA Workshop on „Theranostics“](#)
[Women in Science Award 2007](#)

events

[Scientific Meeting 2007, Lund, 22nd - 24th October 2007](#)

news from the Partners

[SensL, Ireland - The Ultimate Timing](#)
[Genoptics, France - Australian-flavoured Peptide Symposium](#)

jobs in N2L

PCB [Postdoc Position in Neural Engineering](#)
 [PhD Positions in Neural Engineering](#)
 [Senior Engineer Position in Biomedical Robotics](#)
CEA [Post-Doctoral Position - Digital signal processing](#)
NCSR [Director For The Institute of Microelectronics](#)

news and activities

Video Website - First Page of N2L's Public Website

Recently our partner Tel Aviv University received a lot of positive feedback for the video recordings of sessions and tutorials given at Nano2Life meetings. This encouraged us to add a link to the first page of our public website. The collection of videos is constantly complemented and can be accessed under "[E-learning](#)". These video clips, especially those of the tutorials are a great source of information about many topics in nanobiotechnology.

[\[more...\]](#)[\[back\]](#)

Nano2Life Summer School on Nanotech and Nanobiotech in Athens

The advanced Nano2Life Summer school on Methods in Micro – Nanotechnology and Nanobiotechnology took place from June 25th to July 6th in the National Centre of Scientific Research "Demokritos", Athens, Greece, in the Institutes of Microelectronics, Physical Chemistry, Material Science, Biology and Radioisotopes and Radio Diagnostic Products as well as the Foundation for Biomedical Research of the Academy of Athens. 24 participants from several European Institutes (20 from Nano2Life) attended the summer school. The school program with lectures and hands-on experiments covered three sections: "Principles of biochemistry, cell biology, physics and microelectronics", "Core Nanobiotechnology methods and practices" and "Towards Integrated Nanobiotechnology systems".



Lecturers from Nano2Life partners and some other academic institutes as well as the industry were invited. The invited speakers were Professor Yossi Shacham-Diamand (Tel-Aviv University), Dr Joel Rossier (DiagnoSwiss), Dr Martin Bennink (Twente University), Professor Elias Eliopoulos (University of Athens), Dr Anna Mitraki (University of Crete), Dr Maria I. Klapa (FORTH, Patras, Greece) and Professor G. C. Papaefthymiou (Villanova University, USA – IMS, NCSR Demokritos).

The next edition of N2L Summer School will take place in 2008 in Athens again. If you wish to attend the next summer school in 2008, please contact [Irene Mavridis](#).

[\[more...\]](#)[\[back\]](#)

ELSA Workshop on „Theranostics“



The jointly with NanoBio-RAISE organised workshop on "Theranostics" has successfully been held at "Schloss Wilkinghege" in Münster 6th – 8th June 2007. Twenty participants from both networks and invited experts discussed ethical, legal and social aspects (ELSA) of new opportunities provided by combining diagnostic tools with therapeutic treatments enabled by nanotechnology. Rafi Korenstein and Ingolf Cascorby introduced the topic from a scientific point of view and David Rickerby, Hans Riese, Ruth Chadwick and Sjef Gevers added overviews of related ELSA issues. Furthermore, George Zajicek from Axis Shield Diagnostics discussed the issues from an industrial point of view. The results of

the two days discussion were summarized in a meeting report and are available on our website and a short TV clip from a local station can be found [here...](#)

For further information contact [Klaus-M. Weltring](#)

[\[more...\]](#)[\[back\]](#)

events

Nano2Life Scientific Meeting, Lund, 22nd - 24th October 2007

The 2007 Nano2Life scientific meeting will be jointly organized by Lund University, Sweden and MIC, Denmark in Lund, 22nd - 24th October.

Plenary lectures on challenging topics from material sciences, medicine and high tech industries, poster presentations and news from the network, will be on the agenda of the meeting, which will also create a supporting platform for the members of the network to initiate/continue joint collaboration. Parallel sessions will focus on the Strategic Research Programs of the network.

Tutorials selected on topics of nanobiotechnological relevance will increase the knowledge of the multi-disciplinary Nano2Life family in various scientific areas.

The meeting will be followed by a practical training organised for young scientists on knowledge about the Commission's ongoing framework programme and how to manage/organise/write scientific proposals.

[\[back\]](#)

news from the partners

SensL, Ireland - The Ultimate Timing

The HRMTime is ideal for high-resolution timing in applications such as Fluorescence Lifetime Imaging, Single Molecule Detection, Fluorescence Correlation Spectroscopy, Optical Diffusion Tomography, LIDAR/Range Finding and Scanning Microarrays.

HRMTime, a portable USB high-resolution timing module on with 27ps minimum time bin size and 66ps timing resolution is a flexible and high-performance module that eliminates the need for multiple PCI cards and a dedicated desktop PC.



[\[more...\]](#)[\[back\]](#)

GenOptics, France - Australian-flavoured Peptide Symposium



GenOptics would like to draw your attention to the 4th International/7th Australian/2nd Asia-Pacific Peptide Symposium to be held in Cairns Queensland Australia from the 21st to the 26th October 2007. GenOptics, as an official sponsor, will be presenting posters and will be available for discussion at this

prestigious event, which assembles top players in the field of peptide-peptide and peptide-protein interactions. We are available to answer any queries concerning our scientific/technological involvement at the symposium.

Contact: [Nathalie Lasalle](#)

[\[more...\]](#)[\[back\]](#)

jobs in Nano2Life

PCB - Three positions available

Postdoc Position in Neural Engineering and Neurophysics

The neuroengineering lab at IBEC has developed novel all-polymeric multielectrode array chips (ApMEAs) supporting multi-site recording and stimulation of individual patterned neurons and neuronal aggregates in vitro. As part of a multinational European project, these devices are being integrated with an imaging subsystem to exploit voltage-sensitive nanoparticles (VSNs) for optical measurement of membrane potential. ApMEA chips and VSNs hold tremendous potential for basic research on neuronal computation as well as in drug screening in vitro. We offer a postdoc position to pursue research on these technologies.

This opportunity is open to biomedical engineers, neurobiologists and physicists.

The successful candidate will have a strong background in neuroscience and experience in at least one of the following areas; bioinstrumentation for electrophysiology (either conventional patch-clamp and/or multielectrode arrays), microfabrication of biosensors or biomedical optics. We seek a new member for our team with demonstrated academic excellence and ability to work independently. Interest in technology transfer is a plus.

Start date: Immediate.
Deadline for application: **1st October 2007**
Duration: two years with midterm renewal conditional upon performance.
Salary: 25000 euros/year

Send CV, email addresses of three references and brief statement of career.

PhD Positions in Neural Engineering and Neurophysics

Neural engineering and neurophysics are multidisciplinary research fields aiming at the development of novel technologies to monitor and control brain activity. These tools have applications in understanding the mechanisms underlying brain diseases and in seeking effective therapies for their treatment.

The neuroengineering lab at IBEC has developed novel multielectrode array chips (ApMEAs) supporting multi-site recording and stimulation of neurons in vitro. We also explore alternative technologies for computer-neuron interfacing such as voltage-sensitive nanoparticles (VSNs) and multichannel electrophysiology robots.

We seek engineers, neurobiologists and physicists interested in brain-computer interfacing to pursue research towards a PhD in our team.

Start date: December 2007-January 2008
Deadline for application: **1st October 2007**
Duration: four years
Salary: 12000 euros/year

Send CV, academic record (courses taken and marks obtained), email addresses of two references and a brief statement of career goals.

Senior Engineer Position in Biomedical Robotics

The neuroengineering lab at IBEC carries out research on novel technology for monitoring and stimulating neuronal activity, including multielectrode array chips (ApMEAs) and automated electrophysiology instrumentation.

We offer a position for a biomedical engineer with experience in robotics to develop a novel electrophysiology robot. This system will render possible highthroughput studies of network activity in vitro to support development of therapeutic compounds against neurodegenerative diseases.

Candidates with a background in neurobiology or physics will also be considered as long as the following requirements are met.

The successful candidate will have experience in the development of biomedical instrumentation, with emphasis in automated systems. Previous experience in electrophysiology would be desirable. Ability to work independently and demonstrated academic/industrial excellence are essential.

Start date: Immediate.
Deadline for applications: **1st October 2007**
Duration: two years with midterm renewal conditional upon performance.
Salary: 25000 euros/year

Send CV, email addresses of three references and brief statement of career goals.

Contact: [Enric Claverol-Tinturé](#)

[\[more...\]](#)[\[back\]](#)

CEA

Postdoc Position - Digital signal processing applied to neural spikes recording architectures using microelectrode arrays

Neuroscientists are interested in the understanding of the coding and decoding of neural network signals. Thus, a large effort has been conducted for the past decade to improve electrophysiological signal recording techniques. It is currently possible to grow and maintain nervous tissues cells on top of microelectrode arrays (MEA) allowing the simultaneous recording of the waveforms of a couple hundred channels. The next step is aimed at studying large neural networks with a 100- μ m spatial resolution, which requires the development of a new generation of data recording systems with a larger number of acquisition channels. With the large amounts of produced data, new integrated electronics systems and embedded digital signal processing algorithms are being developed. The different types of applications being considered are: fundamental neurosciences research, pharmacology, neuro-prostheses and brain-computer interfaces. Within the framework of the ANR neurocom project, LETI has developed an «in vitro» neural signal recording system adapted to neurosciences applications. This system offers a large number of recording channels, a stimulation capability on every channel and the single-chip integration of both the signal amplification and the stimulation functions. Validation and characterization of this system for in vivo applications are underway.

LETI's goal is to continue the development of integrated solutions to achieve a complete micro-system implementation with ultimately wireless link capabilities. The system architecture must therefore include an embedded signal processing unit, in order to extract the relevant datasets from the recorded waveforms and reduce the data bandwidth.

Work Description

The post-doctoral fellow's contribution will be in line with the project's development plan in terms of design, implementation and integration of a neural signal digital processor architecture closely located to the sensing microelectrode array. A previous post-doctoral fellow has already completed the implementation of some digital processing blocks. The further development of processing blocks and their validations will provide complete real-time processors, with architectures tailored to the applications' specific needs. These modules will also be used for analysis and for evaluation of a custom integrated circuit solution for applications requiring full integration such as brain implants for stimulation or brain-computer interfaces.

The modules' design will be carried out on a VHDL platform and validated on a dedicated data acquisition board. This board will later be integrated in the larger data acquisition system and validated through tests with biologists using real and simulated neural signals.

The post-doctoral fellow will be required develop modules primarily using VHDL functions. The neural signals simulator software, developed in our group, will be made available to her/him to validate the functionality the processing modules. The current electronic platform will also be made available for hardware implementation and validation.

Candidate's Profile

The successful candidate will have a strong electronics background with a proven experience in the design and the implementation of digital architectures. Knowledge of digital signal processing techniques is also desirable. Prior experience in biotechnology or biomedical applications is not required but an interest and an understanding of the fields' requirements are important.

This is a one-year once-renewable appointment.

Contact: [Jean-François Bêche](#)

[\[more...\]](#)[\[back\]](#)

NCSR Demokritos

Open Positions for Directors

The Institute of Microelectronics is looking for a new director. The candidate should be senior researcher (with qualifications of Director of Research A-Full Professor) with long experience in micro and nano technology (research, contribution in science / technology, and management skills), and fluent in Greek. The position is announced by the General Secretariat of Research and Technology of Greece, the government authority supervising NCSR Demokritos.

In addition one can find the following openings for Directors positions:

1. Institute of Organic and Pharmaceutical chemistry of NHRF (National Hellenic Research Foundation), Athens
2. Institute of Electronic Structure and Lasers of FORTH (Foundation of Research and Technology), Crete
3. Two director positions in the Institute of Speech Processing and the Institute of network and network technologies of ATHENA Information Technology Research Centre, Athens
4. Institute of Radio-Isotopes and Diagnostic Products, NCSR Demokritos, Athens

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[\[more...\]](#)[\[back\]](#)

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