MARIE CURIE ACTIONS

INITIAL TRAINING NETWORK

(ITN)

Nano2Fun

7TH EUROPEAN FRAMEWORK

PROGRAM (FP7)

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ABSTRACT:

Nano2Fun's main target is the education of a new generation of scientists with a solid multidisciplinary scientific background, a good attitude to team-work in an international environment and a well-developed propensity to exploit advances in fundamental research towards innovative applications. To achieve this ambitious goal, a network of advanced research laboratories operating both in the public and private sectors is proposed where a group of 17 young and brilliant researchers will be trained through research.

Technological development through research and knowledge transfer are the flag-words of Nano2Fun, a multidisciplinary project that will bring the techniques of two-photon microscopy (2PM) and two-photon polymerization (2PP) to their full maturity, allowing their exploitation in commercially and industrially relevant applications.

The precise chemical and photophysical control of the 2PM and 2PP processes at the nanoscale will be achieved through a coordinated effort of 13 teams with well-established expertise in the diverse and complementary research fields of (a) molecular and supramolecular synthesis, (b) advanced optical spectroscopy and photophysics, (c) theory and (d) the 2PM and 2PP technological applications. The effort of the academic research teams will be fully integrated with applied research and development going on in the advanced R&D laboratories of the 5 partners from the private sector in a virtuous loop that will cooperatively enhance the effectiveness of Nano2Fun team. The inherently multidisciplinary character of the research, that spans a full range of disciplines between chemistry and physics, and is precisely located where fundamental research meets commercial and industrial applications, offers an extremely profitable environment for the education of young researcher both in public and private sectors in a lively international environment at the forefront of research.

PARTNERS:

Partners List:	Country
Università degli Studi di Parma	Italy
Laser Zentrum Hannover	Germany
Université Bordeaux 1	France
J. Nehru Centre for Advanced Scientific Research	India
Pianeta s.r.l.	Italy
University of Antwerp	Belgium
Agencia Estatal Consejo Superior de Investigaciones Científicas	Spain
Pomeranian University in Slupsk	Poland
Nanomol Technologies	Spain
Camelot Biomedical Systems s.r.l.	Italy
Alphanov	France

Associated Partners List	Country
Institute of Physics Nasu	Ukraine
Procter & Gamble Reading Innovation Centre	UK
University of Central Florida (UCF-CREOL)	USA
University of Central Florida (UCF-CHEM)	USA
Uniwersytet Gdanski	Poland

Application procedure:

We seek highly motivated, well-organised students capable of developing and fostering first level and collaborative research.

Requirements for recruitment are outlined in the Recruitment Requirements document at the next section of this document.

We offer:

- Fully funded placements for PhD and postdoctoral training
- Excellent educational and research facilities
- Research training in both academic and industrial settings
- Intensive contacts with fellow researchers across Europe and beyond

Interested applicants are encouraged to carefully read this document and the sub-pages of the website in order to ensure they have a firm understanding of the overall Network aims and those of the individual PhD projects.
Please note that different host institutions may have different eligibility requirements, as listed at the description of each PhD sub-project.

Applications are accepted individually by each of the partners. Each application must enclose the CV, a motivation letter and two recommendation letters.

The final dates of recruitment will be published on our recruitment page, via EURAXESS in international scientific publications and on the member institutions page.

As English is the official language of the network, the application must be submitted in English. For those applicants for whom English is not a native language, or applying from a country where English is NOT an official language of the country or common in the further education system, high level of oral, written and reading English would be required.

ELEGIBILITY REQUIREMENTS:

Eligibility criteria of Marie Curie Initial Training Networks apply. Only applicants who comply with these conditions will be considered.

- Nationality:
  Researchers can be of ANY nationality, but they have to comply with the conditions of mobility.

- Conditions of mobility:
  To be eligible to apply for one of the Early Stage Researcher (ESR) or Experienced Researcher (ER) fellowships in the network, the researcher must not have resided, worked or studied in the country of their (recruiting) host organization for more than 12 months in the 3 years prior to the time of recruitment. Compulsory national service and/or short stays are not taken into account.
  Note that the mobility rule applies to the partner where the researcher is recruited, and not to partners to which the researcher is seconded

  - Example 1) An Italian researcher has moved to France for the first time and has carried out research there for the last six months. He CAN be appointed within an ITN team in France.

  - Example 2) A French researcher has spent 13 months in Germany just prior to his appointment. Before that period he's been working in the UK for 3 years. Thus, he CAN NOT be appointed in an ITN team in Germany.

- Conditions of experience
  - Early Stage Researchers:
    To be eligible for one of the ESR fellowships, the candidate must at the time of recruitment not yet have been awarded the doctoral degree and be in the first 4 years (full-time equivalent) of their research careers. This is measured from the date when he/she obtained the degree which formally entitles

him/her to embark on a doctorate, either in the country in which the degree was obtained or in the country in which the research training is provided, irrespective of whether or not a doctorate was envisaged.
The length of individual appointments for an ESR will be at least 3 months up to a maximum of 3 years within a network.

- Example 3): a researcher has graduated with a first degree in biology in 2004 and would like to start her Ph.D. in 2007. She IS eligible as an ESR within the ITN as she has less than 4 years of research experience and no PhD.

- Example 4): a researcher obtained her PhD after 3½ years. She IS NOT eligible as an ESR within the ITN even though she has less than 4 years of research experience. However, she WOULD BE eligible to be appointed as an Experienced Researcher (ER) within the first five years of her career.

  - Experienced Researcher
    To be eligible for one of the ER fellowships, the candidate must at the time of recruitment be EITHER in possession of a doctoral degree, OR have at least four years full-time equivalent research experience. This is measured from the date when the researcher obtained the degree which formally entitles him/her to embark on a doctorate in the country in which the degree was obtained. In both cases, they should have less than 5 years of full-time equivalent research experience.
    Note: an individual researcher may not be recruited as an early-stage researcher and subsequently as an experienced researcher within the same network. In addition, recruitment of early stage researchers means recruitment of early stage researchers and recruitment of experienced researchers means recruitment of experienced researchers. An early stage researcher cannot be 'converted' to an experienced researcher and vice versa.

- Example 5): a researcher obtained her PhD after 4 years and subsequently worked in research for 13 months under a postdoctoral position. She WOULD

NOT BE eligible to be appointed as an ER as her research experience exceeds the first five years of her career.

- Example 6): a researcher is in the process of writing up her Ph.D. after 4½ years of research and would like to apply for an appointment within an ITN. While she has not yet gained her doctorate, she WOULD NOT BE considered as an ESR due to her level of experience. However, she WOULD BE eligible for recruitment as an ER.

Positions Open:

PhD:

Host	Project Title	Duration (months)	Indicative start date
~~Università degli Studi di Parma~~	~~Optical spectroscopy of organic nanoparticles (ONPs): models and computations.~~	~~36~~	~~01/2014~~
~~Università degli Studi di Parma~~	~~Organic nanoparticles (ONPs): design, growth and characterization.~~	~~36~~	~~01/2014~~
~~Università degli Studi di Parma~~	~~Nonlinear spectroscopy, 2-photon microscopy (2PM) and Stimulated Emission Depletion 2PM (STED-2PM).~~	~~36~~	~~01/2014~~
Laser Zentrum Hannover	Nanochemistry in two-photon polymerization (2PP) processes.	36	12/2013
~~Laser Zentrum Hannover~~	~~New generation of high resolution 3D rapid prototyping technology based on 2-photon polymerization (2PP).~~	~~36~~	~~12/2013~~
~~Université Bordeaux 1~~	~~Design and synthesis of ultra-bright organic nanoparticles (ONPs) for bioimaging.~~	~~36~~	~~11/2013~~
Université Bordeaux 1	Biocompatible and targeted organic nanoparticles (ONPs) for medical applications.	36	11/2013
J. Nehru Centre for Advanced Scientific Research	Supramolecular approach to organic nanoparticles (ONPs).	36	12/2013
University of Antwerp	Second-order nonlinear optical spectroscopy of functional dyes and supramolecular assemblies	36	12/2013

~~Agencia Estatal Consejo Superior de Investigaciones Científicas~~	~~Compressed fluids technology applied to organic nanoparticles (ONPs) growth~~	~~36~~	~~01/2014~~
~~Agencia Estatal Consejo Superior de Investigaciones Científicas~~	~~Design, synthesis and characterization of multipolar systems~~	~~36~~	~~01/2014~~
~~Pomeranian University in Slupsk~~	~~Multiparametric fluorescence probes~~	~~36~~	~~11/2013~~

Post-Doctoral Positions

Host	Project Title	Duration (months)	Indicative start date
Pianeta s.r.l.	Design of innovative nanobiotech tools with 2PM functionality	12	05/2014
Nanomol Technologies	Scaling up ONP production	12	01/2015
Camelot Biomedical Systems s.r.l.	Super-resolution imaging and quantitative analysis for 2PM and STED-2PM	12	08/2014
Laser Zentrum Hannover	Characterization of light-curable polymers	12	09/2014
Alphanov	Generation of ONP by Pulsed Laser Ablation in Liquids (PLAL)	12	09/2014

PhD. Sub-Projects:

ESR 1: **CANDIDATE RECRUITED**

ESR 2: **CANDIDATE RECRUITED**

ESR 3: **CANDIDATE RECRUITED**

The Laser Zentrum Hannover invites applications for two PhD Fellowships in 3D laser structuring, nanochemistry, and additive manufacturing. The fellows are expected to carry out their research program, in collaboration with members of the EU funded Marie Curie Initial Training Networks "*Nanochemistry of molecular materials for 2-photon functional applications*".

Successful applicants also can be enrolled for the PhD program at Leibniz Universität Hannover. Duration of the appointment for each position is 36 months. Applications will be reviewed starting from September 1, 2013, and the search will continue until the positions are filled. It is expected that the successful candidates will be employed as soon as possible.

Recruiting is in accordance with the rules of Marie Curie Initial Training Networks. Candidates must have obtained their degree entitling them to embark on a doctorate no more than 4 years prior to the time of recruitment. At the time of the recruitment by the host organization, researchers must not have resided or carried out their main activity (work, studies, etc.) in Germany for more than 12 months in the 3 years immediately prior to the recruitment. Compulsory national service and/or short stays, such as holidays, are not taken into account.

ESR 4:

Position: PhD Fellowship

Host institution: Laser Zentrum Hannover, GermanyPhD enrolment: Leibniz Universität Hannover, Germany

Duration: 36 months

Project title: Nanochemistry in two-photon polymerization processes.

Objectives:

- Detailed research on 2PP by pico- and nano-second laser pulses and development of new photo-initiators optimized for long laser pulse initiated 2PP (in collaboration with the project partners)
- Research on nanochemistry of polymerization in 2PP-STED configuration. Development of photoresists optimized for 2PP-STED nanofabrication
- Implementation of fluorescence probes for online monitoring of the polymerization process at the nanoscale (in collaboration with PUS)

Tasks and methodology:

- Experiments with 2PP by pico- and nano-second laser pulses
- Experiments on 2PP-STED
- Spectral measurements on new photoresists
- Measurements of two-photon absorption of new photoresists by z-scan technique

Qualifications:

- B.Sc or M.Sc. in Physics, Nanotechnolgy, Material Science or similar relevant discipline
- Fluency in English
- Knowledge in optics, chemistry, computer programming
- Able to engage in teamwork within the group and our collaborators

The application must contain:

- Motivated letter of application
- Curriculum vitae
- Transcript of university examinations (in English)
- 2 recommendation letters

An assessment committee will evaluate the applications. The main criterion for selection will be the research potential of the applicant.

The salary of the candidate will be in accordance with the rules and regulations laid down in the Marie Curie Grant Agreement. A significant mobility and familial status allowance will also be included in remuneration for the position.

Apply online here: http://www.nano2fun.camelotbio.com/

Details on the opened positions as well as requirements for the applicants are listed below. For further information please contact Dr. Roman Kiyan (r.kiyan@lzh.de).
Please forward applications to Dr. Roman Kiyan (r.kiyan@lzh.de).

ESR 5: CANDIDATE RECRUITED

ESR 6: CANDIDATE RECRUITED

ESR 7:

PhD scholarship on "Biocompatible and targeted ONP's for medical applications"

University Bordeaux1, France

ESR 7, 3 Years starting in November 2013-January 2014 to November 2016-January 2017

Project Objectives:

The main objective is the synthesis and functionalization of luminescent ONPs in order: (1) to improve their bioavailability, (2) to aim specific receptors via bio-conjugation and (3) to conduct imaging experiments of receptors in cells.

Planned secondments:

CB, Italy (2 months, Software requirements for 2PM); JNCASR, Bengalore, India (3 months, recognition driven self-assembly); LZH, Hannover, Germany (2 months, STED-2PP)

Description:

This project will focus on synthesis and functionalization of luminescent ONPS in order to tune their bioavailability in biological environments as well as to target them to specific biological receptors.

The candidate is expected to be familiar with synthetic organic chemistry, have good written and oral communication skills in English and is expected to play an important role in the preparation of scientific papers and reports. ESR will have high degree of responsibility and should have strong motivation and desire to work in a trans-disciplinary environment. Women are actively encouraged to apply in line with the European commission approach.

Skills to be acquired: preparation and characterization of ONPs, optical spectroscopy of molecular materials, supramolecular chemistry; STED, basic skills about industrial processes.

Qualifications:

We are looking for top quality applicants

- Holding a M.Sc. in Chemistry or similar relevant discipline.
- Fluent in English
- Able to engage in teamwork within the group and our collaborators

Application:

The application must contain:

- Motivation letter
- Curriculum vitae
- Transcript of university examinations
- Names and contact details of referees

According to the Commission rules, appointees can be national of any country except France and must not have resided in France for more than 12 months in the 3 last years.

An assessment committee will evaluate the applications. The main criterion for selection will be the research potential of the applicant.

The deadline for applications is October 30 2013.

Apply online here: http://www.nano2fun.camelotbio.com/

Applications received after the deadline, or with insufficient documentation or otherwise not complying with the above requirements, may not be considered. It is expected that the successful candidate will be enrolled at the PhD School of Chemical Science at Bordeaux University starting not later than January 15, 2014.

For further information please contact Dr. Mireille Blanchard-Desce (m.blanchard-desce@ism.u-bordeaux1.fr) and Pr Jean-Baptiste Verlhac (jb.verlhac@ism.u-bordeaux1.fr)

ESR 8:

PhD scholarship on "Supramolecular approach to organic nanoparticles"

Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) Bangalore, India

ESR 8, 3 Years starting in January 2014 to December 2016

Project Objectives:

The main objective is the design and synthesis of dyes for targeted supramolecular growth of functional organic nanoparticles for two-photon polymerization and two-photon microscopy applications. The PhD trainee will deal with organic and supramolecular synthesis, time-dependent density functional theory calculations, molecular dynamics simulations and experimental spectroscopy.

Planned secondments:

CSIC, Barcelona, Spain (2+2+2 months, Synthesis and preparation of dyes and organic nanoparticles, PhD defense); Pianeta s.r.l, Italy (1 month, Design of dyes for bioimaging); University of Antwerp, Belgium (2 months, Spectroscopic measurements)

Description:

In this project design and synthesis of dyes would be undertaken keeping in mind the principles of supramolecular chemistry, which would be later applied in growth of organic nanoparticles. These nanoparticles would be endowed with functionalities so as to complement two-photon polymerization and two-photon microscopy related applications. Design and property aspects would be analyzed and assisted by molecular dynamics and time-dependent density functional theory calculations. Theoretical results will be validated against spectroscopic measurements to be run locally and in collaboration with other units. The work is done in tight collaboration with JNCASR, CSIC, Pianeta s.r.l. and University of Antwerp.

The candidate is expected to be familiar with organic synthesis, theoretical chemistry, basics of spectroscopy, have good written and oral communication skills in English and is expected to play an important role in the preparation of scientific papers and reports.

Skills to be acquired: Organic and Supramolecular synthesis; Time-dependent density functional theory calculations; Molecular dynamics simulations; Experimental spectroscopy.

Qualifications:

We are looking for:

- M.Sc. in Chemistry or Physics or Material Science or similar relevant discipline.
- Fluency in English
- Able to engage in teamwork within the group and our collaborators

Application:

The application must contain:

- Motivation letter
- Curriculum vitae
- Transcript of university examinations (in English)
- 2 recommendation letters

An assessment committee will evaluate the applications. The main criterion for selection will be the research potential of the applicant.

The deadline for applications is December 15, 2013.

Apply online here: http://www.nano2fun.camelotbio.com/

Applications received after the deadline, or with insufficient documentation or otherwise not complying with the above requirements, may not be considered. It is expected that the successful candidate will be enrolled at the CSIC, Universitat Autònoma de Barcalona, Spain starting from January 1, 2014 and not later than April 1, 2014.

For further information please contact Prof. Swapan Pati (pati@jncasr.ac.in) or Prof. Jaume Veciana (vecianaj@icmab.es)

ESR 9:

At the Physics department of the University of Antwerp, Belgium, a PhD student position is available within the Laboratory for Experimental Condensed Matter Physics, financed in the framework of the European Initial Training Network Nano2Fun, for research on

Second-order nonlinear optical spectroscopy of functional dyes and supramolecular assemblies.
Due to their highly polarizable electronic system, organic conjugated molecules can exhibit a remarkably strong nonlinear optical (NLO) response which will be studied in this project in view of applications in two-photon imaging and two-photon-initiated microfabrication. Using a worldwide unique measurement setup for second harmonic light scattering with tunable laser wavelength, you will examine the origin of this nonlinear response, and its pronounced resonances in the visible and near-infrared spectrum. The measurement results form the basis for theoretical models (also in collaboration with theoretical groups) and the derivation of structure-property relations which allow you to design new molecules and materials (in close collaboration with synthesis groups) with optimised NLO properties. Second order light scattering spectroscopy (incoherent second harmonic light scattering, SHLS) is complementary to two-photon absorption spectroscopy and also yields fundamentally new insights in the electronic and vibronic structure of organic molecular systems in general. Based on the extreme sensitivity of SHLS to (a)symmetry (unlike 3rd order processes such as 2PA itself), it will also be applied to characterise changes in environment sensitive probes and supramolecular order in organic nanoparticles.

We offer: Your salary during three years as a PhD student in the framework of the abovementioned ITN project. The opportunity to perform research in a multidisciplinary environment with a state-of-the-art experimental research infrastructure, complemented with short stays at the University of Parma for theoretical modeling, at the University of Central Florida - CREOL for two-photon spectroscopy, and at ALPhANOV, Bordeaux, for laser-ablation synthesis of functional organic nanoparticles.

Qualifications:
We are looking for top quality applicants

- Holding a M.Sc. Physics, Chemistry, Engineering or in a related field with excellent grades.
- Fluent in English

- You are particularly motivated for experimental scientific research, and you wish to prepare a PhD in this direction
- Able to engage in teamwork within the group and our collaborators

Application:

The application must contain:

- Motivation letter
- Curriculum vitae
- Transcript of university examinations
- Names and contact details of referees

Promotors: Wim Wenseleers and Jochen Campo

The deadline for applications is November 15 2013.

Apply online here: http://www.nano2fun.camelotbio.com/

For more information: Wim.Wenseleers@ua.ac.be

Laboratory address:
Laboratory for Experimental Condensed Matter Physics
University of Antwerp (campus Drie Eiken),
Physics Department,
Universiteitsplein 1,
B-2610 Antwerpen
BELGIUM

ESR 10: CANDIDATE RECRUITED

ESR 11: CANDIDATE RECRUITED

ESR 12: CANDIDATE RECRUITED

Post Doctoral. Sub-Projects:

Project title: Design of innovative nanobiotech tools with 2PM functionality

Pianeta s.r.l., Italy

ER1, 1 Year starting in May 2014 to April 2015

Project Objectives:

The objectives of the project are the design, synthesis and characterization of dyes and hybrid nanoparticles containing such dyes. The main applications of the dyes in the framework of the project are 2PM (2 photon microscopy) and STED (Stimulated Emission Depletion) -2PM. Further activities are related to the design of a reliable strategy of incorporation of the dyes in inorganic and/or organic nanostructures in order to obtain highly fluorescent nanoparticles for 2PM and STED-2PM. The design and synthesis of chemically stable dyes in extreme environmental conditions (pH, temperature) is of particular relevance.

Planned secondments: UCF-CHEM, Orlando, Florida, USA, to get acquaintance with 2PM technique and to design the experimental validation process.

Description:

The candidate is expected to be familiar with organic chemistry and synthesis of fluorescent and conjugated DpA dyes; have good written and oral communication skills in English and is expected to play an important role in the preparation of scientific papers and reports.

Skills to be acquired: design of hybrid and organic nanomaterials; synthesis and characterization of the inorganic hosts of the hybrid nanoparticles; basic knowledge of the industrial research environment.

Main expected results:

a) Synthesis od DpA dyes and fluorescent quadrupolar dyes
b) Optimized dyes for STED applications
c) Dyes, ONP and hybrid NP for 2PM and STED-2PM
d) Ultrabright ONP and hybrid NP for 2PM

Qualifications:

We are looking for:

- PhD in Chemistry or Material Science or similar relevant discipline.
- Experience in organic synthesis and spectroscopic characterization
- Fluency in English
- Able to engage in teamwork within the group

Application:

The application must contain:

- Motivation letter
- Curriculum vitae with publications
- Transcript of university examinations (in English)
- 2 recommendation letters

An assessment committee will evaluate the applications. The main criterion for selection will be the research potential of the applicant.

The deadline for applications is April 15th, 2014.

Apply online here: http://www.nano2fun.camelotbio.com/

Applications received after the deadline, or with insufficient documentation or otherwise not complying with the above requirements, may not be considered. It is expected that the successful candidate will be enrolled at Pianeta s.r.l. starting in May , 2014.

ER 2:

Post-doc scholarship on "Scaling up ONPs production"

Nanomol Technologies S.A., Barcelona. Spain

ER 2, 1 Year starting in February 2015 to February 2016

Project Objective:

The objective of the overall project is the scale-up, from lab to pilot plant scale, of selected compressed fluid based methodologies for ONPs production, to be able produce reproducible batches with the quality required by the 2PP and 3PM end-users of the consortium.

The Post-doc trainee will deal with scale-up feasibility studies, process and equipment design at pilot plant-scale, of well-established prototypes at lab-scale for ONPs production.

Planned secondments:

Lazer Zentrum Hannover (1 months, hands-on acquaintance with 2PP techniques);

Description:

In this project it will be studied the viability of bringing to pilot plant-scale, the best CFs based methodologies to produce ONPs for 2PA applications . Viability will be first analyzed by using well-known chemical process modeling programs, such as ASPEN Hysisys and ASPEN plus. Upon this theoretical calculations, different plant set-ups (i.e. batch vs continuous) will be designed and evaluated, from the technical, economical and environmental point of view. Finally, the best engineering configuration will be constructed for the production of ONPs and their supply to end-users.

The candidate is expected to be experienced in chemical engineering laboratory work, must have devotion for careful and qualified experimentation and experience in the use of the most common programs for chemical process and equipment design. The candidate is expected to play an important role in the technology transfer issues and in strengthen relationship between industries and research laboratories.

Skills to be acquired: processing of particulate molecular materials using compressed fluids. Scale-up feasibility studies from lab to pilot-plant. Abilities for interdisciplinary research and international collaboration. Basic skills on industrial ONPs manufacturing.

Qualifications:

We are looking for:

- B.Sc (Chemistry or Physics) or a B.Eng. in Chemical Engineering.
- PhD in, Nanotechnolgy, Material Science, Crystal Engineering or similar relevant discipline.
- Candidates with previous experience with ASPEN program for chemical processes evaluation and with plant design programs (i.e. AutoCAD; Visio).
- Fluency in English
- Able to engage in teamwork within the group and our collaborators

Application:

The application must contain:

- Motivated letter of application
- Curriculum vitae
- Transcript of university examinations (in English)
- 2 recommendation letters

An assessment committee will evaluate the applications. The main criterion for selection will be the research potential of the applicant.

The deadline for applications is December 15, 2014.

Apply online here: http://www.nano2fun.camelotbio.com/

Applications received after the deadline, or with insufficient documentation or otherwise not complying with the above requirements, may not be considered. It is expected that the successful candidate will be enrolled at Nanomol Technologies from February 1, 2015 and not later than April 1, 2015.

For further information please contact Dr. Santi Sala (ssala@nanomol-tech.com)

ER 3:

Title: Super-resolution imaging and quantitative analysis for two-photon microscopy (2PM) and Stimulated Emission Depletion (STED) 2PM.

Host: Camelot Biomedical Systems S.r.l.

Duration: 12 months

Indicative start date: 08/2014

Description: The researcher will study and develop novel algorithms to enhance the resolution of two-photon microscopy (2PM) images by relying on convex optimization techniques. The expected outcome is a prototype implementation of the algorithms that will be experimentally tested and validated in collaboration with University of Bordeaux. Furthermore, the researcher will define end-user needs for visualization and processing of 2PM and Stimulated Emission Depletion (STED)-2PM images. The objective will be (i) to design algorithms for knowledge extraction from 2PM raw data using advanced machine learning, and (ii) to implement a web-based application providing a friendly-accessible GUI for data visualization. The algorithms implemented during the project should preferably rely on parallel and distributed computation (e.g. on a cloud infrastructure). A secondment at University of Bordeaux (3 months) will be exploited to get hands-on acquaintance with 2PM techniques.

Objectives · Design and development of algorithms to enhance 2PM image resolution · Design and development of algorithms for knowledge extraction from 2PM raw data · Design and development of a web-based GUI application for data visualization Tasks and methodology · Computer vision and image analysis · Convex optimization techniques · Supervised and semi-supervised machine learning with regularization · Parallel and distributed computation on cloud-based infrastructures

Skills to be acquired: theory and methodology to develop novel algorithms in image analysis, convex optimization and machine learning; software development for quantitative analysis of bioimages and complex data visualization.

ER 4:

The Laser Zentrum Hannover invites applications for Postdoctoral Fellowship in 3D additive manufacturing. The fellow are expected to carry out their research program, in collaboration with members of the EU funded Marie Curie Initial Training Networks "*Nanochemistry of molecular materials for 2-photon functional applications*". Duration of the appointment for the position is 12 months. Applications will be reviewed starting from September 1, 2013, and the search will continue until the position is filled. It is expected that the successful candidate will be employed as soon as possible.

Position: Postdoctoral Fellowship

Host institution: Laser Zentrum Hannover, Germany

ER 4, 1 Year starting in October 2014

Duration: 12 months

Project title: Characterization of light-curable polymers

Objectives: • Environment and age dependent mechanical properties to feed back into RP material development • Design criteria for RP components to mimic engineering polymer properties • In use evaluation of new materials produced by the other partners

Tasks and methodology: • Production of RP components using available and novel materials developed by partners • Mechanical testing (tensometry or indentation), chemical and physical analysis (multi-parametric fluorescence spectroscopy)

Qualifications:

- PhD in Physics, Nanotechnolgy, Material Science or similar relevant discipline
- Fluency in English

- Knowledge in optics, chemistry, material science
- Able to engage in teamwork within the group and our collaborators

The application must contain:

- Motivated letter of application
- Curriculum vitae
- List of publications
- 2 recommendation letters

An assessment committee will evaluate the applications. The main criterion for selection will be the research potential of the applicant.

Recruiting is in accordance with the rules of Marie Curie Initial Training Networks. To be eligible for the fellowship, the candidate must at the time of recruitment be EITHER in possession of a doctoral degree, OR have at least four years full-time equivalent research experience. This is measured from the date when the researcher obtained the degree which formally entitles him/her to embark on a doctorate in the country in which the degree was obtained. In both cases, they should have less than 5 years of full-time equivalent research experience. At the time of the recruitment by the host organization, researchers must not have resided or carried out their main activity (work, studies, etc.) in Germany for more than 12 months in the 3 years immediately prior to the recruitment. Compulsory national service and/or short stays, such as holidays, are not taken into account.

The salary of the candidate will be in accordance with the rules and regulations laid down in the Marie Curie Grant Agreement. A significant mobility and familial status allowance will also be included in remuneration for the position.

Details on the opened positions as well as requirements for the applicants are listed below. For further information please contact Dr. Roman Kiyan (r.kiyan@lzh.de).
Please forward applications to Dr. Roman Kiyan (r.kiyan@lzh.de).

ER 5:

PostDoc scholarship on the laser manipulation of organic nanomaterials "Generation of ONP by Pulsed Laser Ablation in Liquids (PLAL)"

Alphanov: ALPhANOV is a private, non-profit organization and is the Technology Center of the French "Route des Lasers" competitiveness cluster.

ER 15, 1 Year starting in September 2014 to August 2015

Project Objective:

The objective of the project is to develop an alternative technique to produce monodispersed organic nanoparticles (ONPs). This will be divided into two aspects:

1. Improving the efficiency of the of ONP generation in aqueous atmosphere
2. Increasing the concentration of the generated particles

Description:

ONP will be generated by PLAL from solid targets using femtosecond laser pulses to reduce thermal load and material degradation. Parameters will be studied to gain control over particle size, size distribution and long-term stability of the produced ONP. Evaluation of the potential for industrial upscale and economic viability of technology transfer.

Qualifications:

The applicant should hold the following qualifications:

- PhD in Physics or Chemistry
- M.Sc. in Nanotechnology, Material Science or similar relevant discipline.
- Sound background in Ultrashort pulsed laser applications
- Fluency in English
- Basics in French
- Ablility to engage in teamwork within the group and our collaborators

Application:

The application must contain:

- Letter of motivation
- Curriculum vitae
- List of publications

- Transcript of university examinations (in English)
- 3 recommendation letters

An assessment committee will evaluate the applications. The main criterion for selection will be the research potential of the applicant.

Recruiting is in accordance with the rules for Marie Curie Initial Training Networks.
At the time of selection by the host organization, researchers **must not have resided or carried out their main activity (work, studies, etc.) in France for more than 12 months** in the 3 years immediately prior to their recruitment. Short stays, such as holidays, are not taken into account.

Contractual conditions
The salary of the candidate will be in accordance with the rules and regulations laid down in the Marie Curie Grant Agreement.

A significant mobility and familial status allowance will also be included in remuneration for the position.

The French Council of Research wishes to reflect the diversity of society and welcomes applications from all qualified candidates regardless of gender or personal background.

The deadline for applications is 31.03.2015

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