SCIENTIFIC REPORT

Scientific content of the event

Exploratory workshop entitled ***"Design of chromophore systems with specific properties and applications in medicine as biomarkers and / or antitumor agents"*** held at NIRD for Electrochemistry and Condensed Matter Timisoara, Plautius Andronescu Street No.1 in 18-19.04. 2013 brought together some of the best specialists in interdisciplinary fields in science and proposed research specialists with extensive experience in research, with outstanding results throughout his career, having participated in numerous international research projects and, together was constitute a consortium of institutions from which they come into developing international projects, especially in the future HORIZONT 2020 will be launched soon, and the bilateral projects in national and international programs.

The project aimed from the beginning a topic of great interest internationally, with a strong innovative global trend framed in terms of identifying and synthesize new organic luminophores with biological activity, with applications in medical imaging and diagnosis, that the more so how far are huge efforts worldwide to identify and develop new agents with high biological activity and specific properties of natural and statistics show a steady increase in the number of deaths from cancer and is responsible for approximately 25% of deaths worldwide. According to statistics made worldwide, about 1,500 new compounds are identified annually, and about a quarter of prescription drugs are of natural origin. In addition, research has shown that there is a tendency to disappear fast assembly of natural species and their narrowing genetic base, which leads to reconsidering the importance of genetic resources and increased interest in innovative methods of obtaining natural metabolites of interest. Such remarks show our efforts come in addition to the global research for early diagnosis by identifying new complex chromophore structures present advantages of quantum dots and at the same time, it is a fast, economical and efficient analysis and diagnosis.

The **main objective** of the project was to bring together world-renowned specialist for transmitting scientific knowledge and the development of a new scientific research project in international partnership.

Specific objectives, these concerned **i)** acquiring new knowledge by participating in interdisciplinary areas, **ii)** binding of new scientific collaborations bi and / or multilateral framework of national and international programs, **iii)** promoting the image of the National Institute, the concerns experts our multidisciplinary fields, **iv)** promoting Romania's image among the international scientific community and, not least, **v)** involvement of young researchers, students, doctoral and post-doctoral students in organizational activities, receipt of information, communication and initiating scientific discussion in the area of interest.

In the first day of the workshop, after Dr. Adina Elena Segneanu presented to the participants the purpose and objectives of the work-shop, and Dr. Antoinette Folea, University of Jivaskyla, Finland, expert in academic research and research policies with over 12 years of international experience in the development and implementation of research strategies and cutting-edge innovation and alignment with relevant EU policies, program officer in the Directorate General for Research of the European Commission, presented a draft of the future European Framework Programme Horizont 2020. Next, invited lecturers presented their own original contributions, with particular emphasis on the interdisciplinary project and presented scientific information on the synthesis of materials and their functionalization, characterization methods and test their terrestrial natural plant extracts and marine, their chemical synthesis, biomarkers and medical imaging, neurodegenerative diseases and disorders.

The table below provides the topics and experts who presented them.

Topic	Name
Preliminary on, Summary of Workshop Objectives	Adina **SEGNEANU** – National Institute R&D for Electrochemistry and Condensed Matter, Timisoara,
Research directions that could be funded by the EU in "**ORIZONT 2020**" Framework Programme	Antoaneta **FOLEA** – Jyvaskyla University - Finland
Medicinal potential of artificial porphyrinoids	Martin **BRÖRING** – Tehnical University Braunsweigh, Germany
Fast analytical tools for biomarkers sensing	Camelia **BALA** - Bucharest University, Romania
Use of contrast media in modern medical imaging	**Gratian MICLAUS** – SCM "NEUROMED", Timisoara, Romania
Fluorescent and photoactivatable derivatives of marine natural products	Thomas **LINDEL** - Tehnical University Braunsweigh, Germany
Utilization of the Biomarkers to Improve Cervical Cancer Screening	Dr. Elena **BERNARD** Victor Babeş University of Medicine and Pharmacy, Timişoara Romania
Antitumor and neurologically active ingredients from medicinal plants	Prof Liu **Xinmin** – Institute of Medicinal Plant Development, Chinese Academy of Medical Sciences & Peking Union Medical College, Peking, China
Fast analytical tools for biomarkers sensing -	Camelia **BALA** - Bucharest University, Romania
Bioinorganic metal-peroxo chromophores in the fight against cancer. The case of vanadium	Thanos **SALIFOGLOU** - Aristotle University of Thessaloniki, Greece
Biological effects of some vegetal substances with chromophore properties	Elvira **GILLE** – „Stejarul" Biological Research Center, Piatra Neamt, Romania
Molecular probes for in vitro and in vivo imaging of protein aggregates	Andrej **PĚTRIC** - University of Ljubljana, Slovenia

In the second day of action, based on the need to identify and develop the chromophore with specific properties with potential for the development of complex chemical structures with important applications in medicine as biomarkers and / or antitumor agents, participants worked on the basic principles of the future project. Thus, its purpose has been established, the general objective and specific objectives, has made an estimate of the number of partners who will be involved, which are the partners that would be involved in future project (they have already been identified in the program) and articles discussed the future of scientific

collaboration framework agreement are expected to be signed later, after you have completed with all participants in future project.

In conclusion, the action proved to be a very useful tool to communicate directly, face to face, scientific information, each specialist expertise, as well as defining the purpose, development objectives, distribution of tasks, etc.. It was established that after returning to the country of origin, specialists present to develop the project work packages, transmitted between them, so the project coordinator INCEMC Timisoara, action can begin writing it.

In parallel, following the initiation of preliminary discussions during the workshop, there were discussions to develop a second project in the same partnership that will address doctoral students and young doctors, the project will be developed in the HORIZONT 2020 Marie Curie actions and whose aim is to specialize in young doctoral and postdoctoral researchers who want to develop a successful scientific career in the field concerned. Also we have held a series of bilateral talks, especially the foreign ones Romanian researchers to jointly developing bilateral projects.

Project results were accomplished by:

- Setting up an international consortium;
- Identification of synergistic concerns for developing international scientific research project;
- Develop scope, scientific objectives, identifying new international partners;
- Identify partnerships and bilateral cooperation between the Romanian and those coming from abroad, and between them;
- Active participation of young researchers,
- Take action to increase international visibility,

Workshop brought important benefits prospect of short, medium and long term, both **socially,** can be quantified by increasing opportunities for training in highly specialized research teams, of young specialists intro scientific area of great interest in worldwide through the development of **environmental protection** and the development of appropriate methods for chemical synthesis of the concept of sustainable chemistry, and drawing and terrestrial and marine ecosystem and a **strong scientific impact,** a large **international visibility** of Romanian research involvement of specialists with broad scientific expertise and international recognition in theme, with appropriate research infrastructure, modern, opening up opportunities for involvement in this field of scientific research Romanian general meeting international partnership and a strong **economic impact** highly dynamic assembly industry (pharmaceuticals and food supplements). All this leads to a positive impact on the human body and the natural environment, to increase

competitiveness and international visibility of Romanian institutions by promoting excellence in international scientific circles and creativity Romanian scientific research.

Workshop had an impact on participants. They each come with their own expertise, they met each other, have scientific talks aimed at the interdisciplinary project being actively involved.

Although the project will be developed jointly addressing domain 5 - Materials and Synthesis: materials synthesis, structure-properties relations, functional and advanced materials, molecular architecture, organic chemistry, and multidisciplinary character, he is addressing will help develop in parallel to new scientific fields such as health, biotechnology, environment, create such opportunities for developing new directions for research into the early identification and treatment of severe neurodegenerative disorders, with major implications on the population.

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