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**A great success for Cyprus and the Faculty of Engineering of the University of Cyprus in the European Programme COST: It coordinates 2 of the 40 New European Research Networks**

The European Programme COST (European Co-operation in the Field of Scientific and Technical Research) for 40 years promotes networking of researchers in many interdisciplinary fields and complements other European research support programmes. The approval of COST proposals requires to go through a successful path of a highly competitive two-stage process of proposal submission (summary of the proposal and the full proposal) as well as a phase of hearings in Brussels, in a large audience of experts (about 40 members).

During the invitation of September 2013 a total of **1,172** proposal abstracts were submitted, while **40** proposals were eventually approved.

From the **97** proposal abstracts that were submitted on the first stage in the thematic area **ESSEM** (Earth System Science and Environmental Management) , only 4 were funded. **One of them was submitted and coordinated by Dr. D. Fatta-Kassinou, the Director of the International Water Research Center of the University of Cyprus, Nireas.**

From the **95** proposal abstracts that were submitted in the thematic area **ICT** (Information and Communication Technologies), , there were also funded only 4. **One of them was submitted and coordinated by Dr. I. Georgiou from the Department of Electrical and Computer Engineering of the University of Cyprus.**

***Further information on the funded research proposals***

**Action ES1403, «New and emerging challenges and opportunities in wastewater reuse (NEREUS)», Dr. Despo Fatta-Kassinou.**

*Wastewater reuse is currently considered globally as the most critical element of sustainable water management. Water scarcity, foreseen to aggravate, pushes for maximum utilization of non-conventional water. Although reuse is accompanied by a number of benefits, several potential drawbacks still puzzle scientists. The applied treatments fail to completely remove microcontaminants, antibiotic-resistant bacteria and/or their genes (ARB&Gs). The xenobiotic compounds in reused wastewater rare, for example, substances contained in cosmetics and detergents (e.g. alkylphenols, parabens) residuum and metabolites of drugs steroid hormones*

(including natural female hormones such as estradiol, estrone, estriol as well as synthetic hormones such as ethinyl estradiol, which is the main active ingredient of contraceptive pills) phthalate esters (substances contained mainly in plastic products),etc.

The new Action of the European Network COST **NEREUS** ES1403 (**NEw** and emerging challenges and opportunities in wastewater **REUSE**) aims to provide substantiated answers regarding the actual impact of the reuse of municipal wastewater on the environment and human health through the establishment of a European Interdisciplinary Network. During the submission of the proposal, the action involved a large number of research institutions from 27 European countries (137 scientists) which belong to the cost network. Particularly important is also considered the participation of scientists from institutions of countries which do not belong to the COST network, like Australia (University of South Australia), Korea (Gwangju Institute of Science and Technology), Singapore (Nanyang Technological University) and the USA (Stanford University , US EPA, University of Arizona, University of Cincinnati, University of South Carolina) as well as the participation of the Joint Research Center (DG JRC, ISPRA) of the European Union. In the Action Working Groups are involved distinguished scientists from various Universities and Research Institutes with internationally acknowledged research and experience in issues related to the reuse of municipal wastewater. The Action will last four years and it will costs 108 million euros.

With the approval and the funding of this Network the importance of the work of the **International Water Research Center Nereus** is recognized at a European level, and is given the unique opportunity for Cyprus to lead on the efforts for the strengthening and reinforcing of the safe reuse of the reformed municipal wastewater sludge at a European level.

#### **Action IC1401, «Memristors - Devices, Models, Circuits, Systems and Applications (MemoCiS)» - Dr. Ioulios Georgiou**

The invention of the "transfer-resistor" or "transistor", as it is known today, is considered the most important invention of the twentieth century, since it is the basis of all the computer systems. The next revolution in technology will come through electronics which will auto-programmed and will have the opportunity to auto-create internal links between the elements, as it is done on a daily basis in the brains of living beings. The recent invention of "Memristor" from Hewlett Packard, as well as from other research laboratories, including the *Holistic Electronics Research Laboratory at the University of Cyprus offering* a fundamentally new electronic component, which enables auto-formed interconnections based on the quantity and the direction of the load flow, within an integrated circuit.

The aim of the new Action of the European Network IC1401, "Memristors - Devices, Models, Circuits, Systems and Applications (**MemoCiS**)", is attracting and uniting scientists working in this emerging field, and who come from different scientific backgrounds, in order to work together so as to overcome the remaining interdisciplinary challenges of the sector. To effectively overcome the challenges, Solid State Physics engaged with the design of electronic components will need to cooperate, Chemists, Circuit Theorists, Designers of Analog and Digital Circuits, Designers of Neuromorphic Circuits and scientists of Computational Neuroscience.

During the writing of the proposal more than 50 scientists from 13 different countries expressed their interest to participate. The programme will last four years and the cost is approximately estimated € 52.000.000.

The planned activities include various annual conferences aiming to coordinate research in order to avoid overlapping of the research activities and the targeted centrality of activities at the key areas designated in the proposal. The new Action has four interdisciplinary working groups that will deal with issues related to:

1. Construction Technology of Memory Resistors
2. Theory, Modeling and Simulation of Memory Resistors
3. Designing Circuits with Memory Resistors
4. Designing Integrated Systems with Memory Resistors

With the approval and funding of this Network the importance of the work of the **Holistic Electronics Research Laboratory at the University of Cyprus** is *internationally recognized*. The supporting from renowned foreign teams such as the Leon Chua (University of California, Berkeley) and from big companies such as IBM and Tower Semiconductor is indicative of the work level that is done in this lab.