

An initiative of the Portuguese Foundation for Science and Technology, in collaboration with the Council of Rectors of the Portuguese Universities and the University of Texas at Austin

## Emerging Technologies

### Report of Activities (January – May 2014)

#### Preamble

Since 2013, CoLab has been developing a fourth academic initiative in the emerging area of Nanotechnology in addition to the ones established in 2007: Advanced Computing, Digital Media, and Mathematics.

The main idea of the UT-Austin|Portugal program in nanotechnology and nanoscience is to advance a collaborative vision in nanotechnology research, education, and training, as well as to explore common interests in technology commercialization. Of special interest is promoting the transfer of new nanotechnologies to industry in Portugal and nurturing the formation of new companies located in Portugal to exploit the latest scientific and technological advances. The Emerging Technology / Nanotechnologies program will be coordinated by UT-Austin (Brian Korgel) and Portugal (Paula Vilarinho) and has two goals:

- (1) Enhance Portugal's graduate programs and research in nanotechnology by creating seamless exchange opportunities for faculty and students to share new knowledge, ideas, experience, and capabilities;
- (2) Foster economic development in Portugal by bridging UTEN with state-of-the-art nanotechnology researchers, with the aim of creating and instituting new best practices for transferring new nanotechnology to the private sector to target global markets.

Though the activities on Emerging Technologies just started by the end of October 2013, among the several actions scheduled for the period 2013 – 2017, the activities of Emerging Technologies from January till May 2014 are listed and described below.

#### Activity 1

Designation: “Kick Off Meeting” of Emerging Technologies

Local: Universidade de Aveiro

Date: 23 - 24 January 2014

Coordination: Paula Vilarinho and Brian Korgel

Participants: Portuguese and UT Austin researchers of Emerging Technologies:

Portugal: Albano Cavaleiro (UCoimbra), Ana Cristina Freire (UPorto), Helena Florindo (UTécnica de Lisboa), Pedro Granja (UPorto), Rui Reis (UMinho), Tito Trindade (UAveiro), Elizabete Costa (UAveiro) and Paula Vilarinho

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(UAveiro).

UT Austin: Michael Baldea, Paulo Ferreira, Brian Korgel, Della Milliron  
Nicholas Peppas, Carolyn Seepersad, Thomas Truskett

Objectives: Detailed presentation of R&D activities in the area of Emerging Technologies in Portugal and at UT Austin, discussion on possible collaborations, identification of synergies and possible projects.

Out put: Definition of the Terms of Reference for the first Project Call (2014).

Terms of reference:

1. biomedical systems, molecular recognition, scaffolds, biomaterials, tissue engineering, stem cells, nanomedicines, intracellular trafficking, theranostics
2. nanoparticle systems, nanoparticle assemblies, modelling and optimal design, in situ microscopy, stimuli responsive materials and surfaces, optical and/or magnetic tuning
3. additive manufacturing, multifunctional nanocomposites, devices with integrated multifunctionality, high throughput, complex (hierarchical) structures, customized (bio)reactors, “printers manufacturers”.



*Photo 1: Participants at Kick Off Meeting of Emerging Technologies, University of Aveiro, January 2014. From left to right: Elizabete Costa (UA), Brian Korgel (UTAustin), Carolyn Seepersad (UTAustin), Thomas Truskett (UTAustin), Michael Baldea (UTAustin), Helena Florindo (UTécnica de Lisboa), Nicholas Peppas (UTAustin), Paula Vilarinho (UAveiro), Rui Reis (UMinho), Della Milliron (UTAustin), Paulo Ferreira (UTAustin), Tito Trindade (UAveiro), Pedro Granja (UPorto) and Ana Cristina Freire (UPorto).*

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## Activity 2

*Designation:* Brain storming between CoLab areas (Advancing Computing, Digital Media, Emerging Technologies and Mathematics)

*Local:* Universidade de Aveiro

*Date:* 28 April 2014

*Coordination:* Paula Vilarinho

*Participants:* Portuguese researchers in the areas of Advancing Computing, Digital Media, Emerging Technologies. The area of Mathematics though invited was not represented.

Elizabete Costa (UAveiro- Emerging Technologies), Paula Ferreira (UAveiro – Emerging Technologies), Paula Vilarinho (UAveiro – Emerging Technologies), Tito Trindade (UAveiro – Emerging Technologies), Adélia Sequeira (IST – Advanced Computing), Fernando Santana (UNL - Program Director), Nuno Correia (UNL – Digital Media), Alberto Proença (UMinho – Advanced Computing), Fernanda Proença (UMinho- Emerging Technologies), Luís Paulo Santos (UMinho – Advanced Computing), Manuel Melle Franco (UMinho- Emerging Technologies), Alipio Jorge (UPorto – Advanced Computing) Fernando Silva (UPorto – Advanced Computing), Veronica Orvalho (UPorto-Advanced Computing), António Coelho (UPorto – Digital Media), José Azevedo (UPorto – Digital Media).

*Objectives:* Detailed presentation of R&D activities in the area of Advancing Computing, Digital Media and Emerging Technologies and discussion possible collaborations, identification of synergies and identifying possible projects.

*Out put:* Identification of projects and teams for R&D among Advancing Computing, Digital Media, Emerging Technologies and Mathematics.

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*Photo 2: Participants at Brain Storming between CoLab areas (Advancing Computing, Digital Media, Emerging Technologies and Mathematics) at the Universidade de Aveiro, April 2014. From left to right Verónica Orvalho (UPorto), Alípio Jorge (UPorto), Fernando Silva (UPorto), Tito Trindade (UAveiro), Manuel Melle Franco (UMinho) and Fernanda Proença (UMinho).*

### **Activity 3**

**Designation:** Workshop on Nanosciences / Nanotechnologies e Road Show on Nanotechnologies

**Local:** INL (International Iberian Nanotechnology Laboratory), Instituto Superior Técnico (IST), Lisboa, Universidade de Aveiro, Universidade do Minho e Universidade do Porto, Innovnano (Coimbra) e Hovione (Loures)

**Date:** 12 -15 May 2014

**Coordination:** Paula Vilarinho e Brian Korgel

**Participants:** Portuguese researchers in the areas of Advancing Computing, Digital Media, Emerging Technologies and Mathematics, Industrials, PhD students (doctoral program Materials Sciences and Engineering of UAveiro).

**Objectives:** Public presentation of Emerging Technologies area within the International Collaboratory for Emerging Technologies, CoLab program at

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universities and industries. Lectures within the course of the doctoral program in Materials Science and Engineering, University of Aveiro.

Out put: Talks at University of Minho, Porto, Aveiro and Instituto Superior Técnico (IST), discussion meetings at Innovnano (Coimbra) and Hovione (Loures), Workshop on Nanotechnologies within 2D 3D Nanostructured Materials course.



*Photo 3: Participants at Emerging Technologies presentation at IST (Lisbon), May 2014.*

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*Photo 4: Prof. Brian Korgel during his talk at the University of Aveiro, May 2014. Prof. Korgel was presenting his work on Multiexciton Solar Cells of CuInSe<sub>2</sub> Nanocrystals.*

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**Planned activities 2014 - 2015**

- White Paper: Nanosciences and Nanotechnologies in Portugal
- Meetings with Portuguese Companies and Portuguese R&D groups
- Visits / stays (portuguese faculties and PhD students) at UT Austin
- Workshop on Nanotechnologies / preparation Project Call (2015)
- International meeting on Emerging Technologies (May 2015, to confirm)

Paula Vilarinho, Aveiro, May 2014