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**International
Summer
School on:**



NANOMATERIALS FOR ENERGY AND ENVIROMENTAL APPLICATIONS

El Escorial (Spain), 29th June – 3rd July 2015

Grants for accommodation and registration of students are available!!

School Chairs:

Smagul Karazhanov:

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<http://www.summerschool.org.es>

Due to a high surface to volume ratio, significant transport properties, and confinement effects resulting from the nanoscale dimensions, nanostructured materials are extensively studied for energy-related applications such as solar cells, catalysts, thermoelectrics, lithium ion batteries, super-capacitors, and hydrogen storage systems. Beside the development of the proposed materials would contribute to the improvement of energy related devices, having a beneficial effect on the climate change-problematic, improving our life quality, and promoting the sustainable use of natural resources. The results to be presented are of interest for a wide range of applications on energy production (e.g., photovoltaic technology), energy storage (batteries, hydrogen storage, and super-capacitors), and environmental monitoring applications (sensors). The additional global demand for energy by 2050 is estimated to be 20 terawatts (TW). With the stringent environmental safety concerns, viable approaches are to utilize photovoltaic energy and to improve other sustainable energy production processes as well as energy storage capabilities. The targeted participants are science students on different levels (such as last year degree students, Master students, PhD students, and recent postdoc's).



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Program

June 29, Monday

- 10 : 30 h** **Smagul Karazhanov**, Institute for Energy Technology. **Ana Cremades**, Universidad Complutense de Madrid, and Institutional Representant of UCM or NILS.
Opening Session.
- 10 : 45 h** **Bianchi Méndez**. Universidad Complutense de Madrid.
Introduction to nanomaterials
- 12 : 00 h** **Erik Marstein**. Institute for Energy Technologies.
Nanostructures for solar cells I: Advanced materials for high efficiency
- 16 : 30 h** **Round Table: Short presentations, poster and best poster nomination.**
Chairpersons: Bianchi Méndez, Erik Marstein, Institute for Energy Technologies

June 30, Tuesday

- 10 : 30 h** **Josefine Selj**. Institute for Energy Technologies.
Nanostructures for solar cells II: Light Trapping
- 12 : 00 h** **Guillermo Orellana**. Universidad Complutense de Madrid.
Nanostructures for chemical sensing applications
- 16 : 30 h** **Round Table:** Enviromental and sustinable architecture applications on nanomaterials.
Chairpersons: Smagul Karazhanov.
Participants: Josefine Selj, Guillermo Orellana, and Pedro Hidalgo, Universidad Complutense de Madrid.

July 1, Wednesday

- 10 : 30 h** **Bjørn Hauback**. Institute for Energy Technologies.
Nanomaterials for hydrogen storage.
- 12 : 00 h** **Plenary conference** open to all participants.
- 16 : 30 h** **Round Table:** International Coordinated Research within Nils Programme and other international frameworks.
Chairperson: Ana Cremades.
Participants: Marta Aguerri, NILS Programme Director, Bjørn Hauback, Julio Ramírez.

July 2, Thursday

- 10 : 30 h** **Julio Ramírez**. Universidad Complutense de Madrid.
Nanomaterials characterization I: advanced transmission electron microscopy.
- 12 : 00 h** **Ana Cremades**. Universidad Complutense de Madrid.
Nano and micro -resonators and nanogenerators.
- 16 : 30 h** **Activity:** Nanomaterials: Let's Play!
Chairpersons: Paloma Fernandez, Universidad Complutense de Madrid, David Maestre, Universidad Complutense de Madrid, and Emilio Nogales, Universidad Complutense de Madrid.

July 3, Friday

- 10 : 30 h** **David Maestre**. Universidad Complutense de Madrid.
Nanomaterials characterization II: advanced spectroscopies.
- 12 : 00 h** **Smagul Karazhanov**. Institute for Energy Technology.
Nanoparticles and Device Modelling.
- 16 : 30 h** **Smagul Karazhanov, Ana Cremades**, and Institutional Representant of UCM or NILS.
Closing session and presentation of diplomas.