Departamento Tecnología Electrónica

UC3M

Proyecto de Innovación Docente

Making novel researchers. Poster Session

Cristina de Dios Fernández
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Universidad de Alcalá

POLITÉCNICA

uc3m | Universidad Carlos III de Madrid

Máster Interuniversitario en Ingeniería Fotónica

- MÁSTER DE INVESTIGACIÓN
  - **60 ECTS** (1 año)
  - Asistencia **presencia**l en las 3 universidades
  - Estudiantes con perfil en ingeniería (telecomunicaciones, industrial) y Física
- ASIGNATURAS
  - **Simulations Tools** (obligatoria)
  - **Nanophotonics** (optativa)

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- **¿QUIENES?**

  - Cristina de Dios Fernández

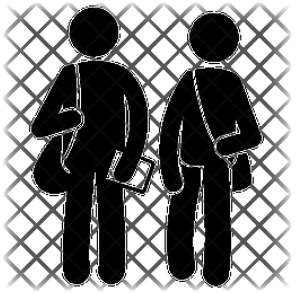
  - David Sánchez Montero

  - Braulio García Cámara (Coord.)

¿QUÉ BUSCAMOS?

- ✓ **Dinamismo** y **participación** del alumnado.
- ✓ Nuevas **formas de evaluación.**

- ✓ Promover **aptitudes para el trabajo de investigación**:
  - Análisis de bibliografía.
  - Síntesis.
  - Experiencia en la presentación de resultados.
  - Discusión y sentido crítico.



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- **¿QUÉ PROPONEMOS?**

  Simular una **sesión de poster** de un congreso de investigación

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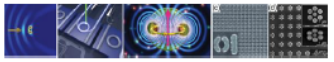
- **¿CÓMO IMPLEMENTARLO?**



NANOPHOTONICS
(MiPhot)

Potential Works and References

1. Metamaterials

http://iopscience.iop.org/article/10.1088/2040-8986/aa7a1f/meta

a. **Subtopic. Electromagnetic cloaking**
   i. https://www.sciencedirect.com/science/article/pii/S1369702109700720
   ii. https://www.nature.com/articles/ncomms2219
   iii. http://science.sciencemag.org/content/314/5801/977
   iv. https://www.nature.com/articles/srep20219

b. **Subtopic. Negative refraction**
   i. http://science.sciencemag.org/content/305/5685/788
   ii. http://aip.scitation.org/doi/abs/10.1063/1.4968802
   iii. https://www.nature.com/articles/nphoton.2006.49

c. **Subtopic. Plasmonics metamaterials**
   i. https://www.nature.com/articles/nphoton.2014.247
   ii. https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.101.047401
   iii. https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.105.227403
   iv. https://www.nature.com/articles/nnano.2013.25?cacheBust=1507868943328
   v. https://www.nature.com/articles/ncomms1805

d. **Subtopic. Tuning optical constants (Near-zero refractive index)**
   i. https://www.nature.com/articles/nphoton.2017.13
   ii. https://www.nature.com/articles/nphoton.2013.256?cacheBust=1507851591011
   iii. https://journals.aps.org/prb/abstract/10.1103/PhysRevB.75.155410
   iv. http://aip.scitation.org/doi/abs/10.1063/1.3565172

2. Plasmonics and Dielectric Nanoparticles

a. **Subtopic. Optical magnetism.**
   i. https://www.osapublishing.org/oe/abstract.cfm?uri=oe-21-20-23007
   ii. https://www.nature.com/articles/srep00492
   iii. http://pubs.rsc.org/-/content/articlelanding/2014/tc/c4tc01406e/unauth#!divAbstract
   iv. https://pubs.acs.org/doi/abs/10.1021/nl401642z
   v. https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.108.097402

b. **Subtopic. Directional scattering**
   i. https://www.nature.com/articles/ncomms2538
   ii. https://www.nature.com/articles/ncomms2167
   iii. https://pubs.acs.org/doi/abs/10.1021/acsphotonics.5b00261

   iv. https://pubs.acs.org/doi/abs/10.1021/acs.jpcc.5b06302
   v. https://pubs.acs.org/doi/abs/10.1021/nn402736f

c. **Subtopic. Biosensors and medical treatments based on plasmonics.**
   i. http://aip.scitation.org/doi/abs/10.1063/1.4707382
   ii. https://www.osapublishing.org/oe/abstract.cfm?uri=oe-18-9-9561
   iii. https://www.nature.com/articles/nmat2162
   iv. https://link.springer.com/article/10.1007%2Fs11468-011-9228-1?LI=true

3. Photonic Crystals

a. **Subtopic. Photonic (time) crystals**
   https://www.nature.com/articles/s41598-017-17354-6

b. **Subtopic. Photonic crystal laser emitters**
   http://aip.scitation.org/doi/full/10.1063/1.4977927

c. **Subtopic. Photonic crystal fibers: integrated interferometer**
   http://advances.sciencemag.org/content/4/1/e1701723.full

d. **Subtopic. Photonic crystal fibers: sensing properties**
   https://www.nature.com/articles/srep41983

4. Non-linear nanooptics

a. **Subtopic. Attosecond nanophotonics**
   https://www.attoworld.de/fileadmin/user_upload/tx_attoworld/publications/paper_NatPhot_Y2017_M04_D01_V11_R210.pdf

b. **Subtopic. Nonlinear plasmonics and giant nonlinearities**
   https://www.nature.com/articles/nphoton.2012.244

c. **Subtopic. Synthesis and switching of light**
   https://www.nature.com/articles/s41566-017-0002-6

5. Frontiers of nanofabrication.

a. **Biocompatible nanostructures**
   https://www.nature.com/articles/s41598-017-19008-z

b. **Scanning probe nanolithography**
   https://www.nature.com/articles/nnano.2014.157

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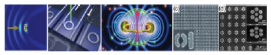
- **¿CÓMO IMPLEMENTARLO?**



NANOPHOTONICS (MiPhot)

Work's Assignment

Student	Work	Contact for questions
	Biocompatible nanostructures	Braulio García (brgarcia@ing.uc3m.es)
	Nonlinear plasmonics and giant nonlinearities	Cristina de Dios (cdios@ing.uc3m.es)
	Plasmonic Metamaterials	Braulio García (brgarcia@ing.uc3m.es)
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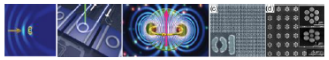
	Synthesis and switching of light	Cristina de Dios (cdios@ing.uc3m.es)
	Biosensors and medical treatments based on plasmonics.	Braulio García (brgarcia@ing.uc3m.es)
	Electromagnetic cloaking	Braulio García (brgarcia@ing.uc3m.es)
	Photonic crystal laser emitters	Cristina de Dios (cdios@ing.uc3m.es)



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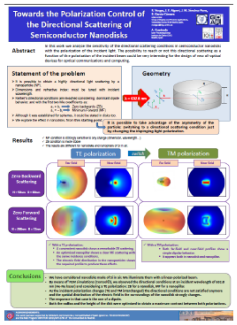
Instructions for the work



1. The objective of the work is to **do a poster** in which the student should briefly explain the main aspects of his/her topic.

2. Posters are usually composed of the following sections:

   a. Abstract. It is a summary of the poster in one or two paragraphs.

   b. Introduction. The state-of-the-art of the topic, its main characteristics, advantages and disadvantages, etc.

   c. Theoretical aspects. The main theoretical aspects are briefly summarizes in this section.

   d. Results. It is the main part of the paper and it includes the main results in the topic. In this case, it may describes the main results that have be done until this moment.

   e. Conclusions. A final summary with the main conclusions about the topic.

3. Poster are mainly visual, thus it usually includes several figures with few text. In addition, the text is usually written as lists.

4. During the presentation, the student should explained his/her poster and answer the questions to show his/her knowledge about the topic.

5. **The poster should be able two days in advance of the Nanophotonics Workshop** (14^{th} March) in order to have time to print them and for the analysis of classmates.

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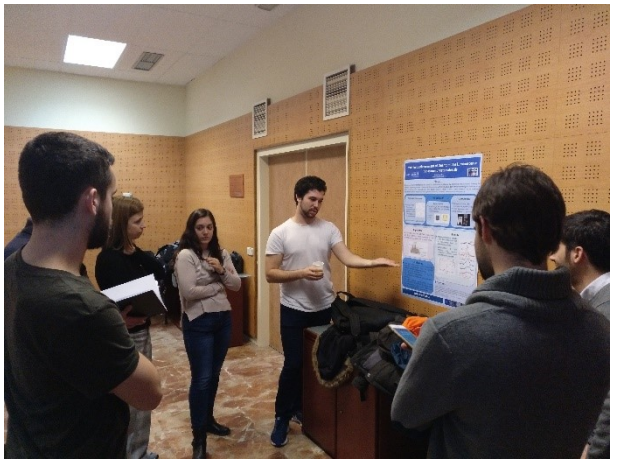
- **EL RESULTADO**



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- **CONCLUSIONES**

  - ✓ **Nuevas formas de trabajar** los contenidos de la asignatura
  - ✓ Acercamiento al **trabajo científico**
  - ✓ **Implicación** de los/as estudiantes en la evaluación
  - ✓ Desarrollo de **aptitudes extracurriculares**

¡Gracias!


cold
excellent
bad
delicious
clean
amazing
delicious
long
recommend highly
ABCDE
bad
predictable