

1. Interested institution:

Instituto de Síntesis Química y Catálisis Homogénea ISQCH (Zaragoza)

<http://www.isqch.unizar-csic.es/ISQCHportal/>

<http://conchita-gimeno.webs.com/>

The Spanish National Research Council (CSIC)

C/ Serrano 117, 28006, Madrid (Spain)

www.csic.es

2. Brief Description of the Institution

The Spanish National Research Council (CSIC) is the largest public institution dedicated to research in Spain and the third largest in Europe. Belonging to the Spanish Ministry of Economy and Competitiveness through the Secretary of State for Research, Development and Innovation, its main objective is to develop and promote research that will help bring about scientific and technological progress, and it is prepared to collaborate with Spanish and foreign entities in order to achieve this aim. It has a staff of more than 13,000 employees, among these about 3,300 are permanent researchers and about 4,300 are pre- and post-doctoral researchers. The CSIC has 70 fully own institutes or centres distributed throughout Spain. In addition, it has 53 Joint Research Units with universities or other research institutions. There is also a delegation in Brussels and Rome.

CSIC has considerable experience in both participating and managing R&D projects and training of research personnel. Under the 7th Framework Programme CSIC has signed approximately 700 actions (including 97 coordinated by CSIC and 47 ERC projects). Funding wise, CSIC is listed the 1st organization in Spain and the 5th in Europe in the 7th Framework Programme, with a total FP7 contribution of over 260 million euros. During the first calls of H2020, CSIC has had an intense participation in all programmes. It has been remarkable the participation in certain calls, such as ERC and Marie Curie, as well as in ICT, NMBP and Societal Challenges. In March 2015 CSIC has obtained 90 projects with a total financial contribution of 40 million euros.

3. Please tick the areas of research (as established in Marie Skłodowska Curie Actions)

“EXPRESSION OF INTEREST” FOR HOSTING MARIE S. CURIE FELLOWS IN SPANISH INSTITUTIONS (CALL MSCA IF 2015)

- | | |
|--|---|
| <input checked="" type="checkbox"/> Chemistry (CHE) | <input type="checkbox"/> Environmental Sciences and Geology (ENV) |
| <input type="checkbox"/> Social Sciences and Humanities (SOC) | <input type="checkbox"/> Life Sciences (LIF) |
| <input type="checkbox"/> Economic Sciences (ECO) | <input type="checkbox"/> Mathematics (MAT) |
| <input type="checkbox"/> Information Science and Engineering (ENG) | <input type="checkbox"/> Physics (PHY) |

4. Research / Project Description

Gold chemistry has experienced a great explosion recently because the discovery of the unusual properties of gold compounds as good optical, catalytic or biological activity. **We are centered in the tailoring of gold complexes oriented towards the search of novel properties and applications**, mainly focused in the **optoelectronics, catalysis and biomedicine**. A crucial point will be the ligand design strategies for the development of gold materials. Several goals related to the specific properties have been defined:

1. Synthesis of light-emitting compounds. The experience in gold complexes will be applied in order to achieve the synthesis of target complexes displaying suitable properties for their application as **sensors, biological markers, OLEDs, dye-sensitized solar cells (DSSC)**, etc. In order to carry out a proper choice of the most adequate species, we intend to perform a deep study of the following parameters: the metal, including its oxidation state and geometry, the ligands and the presence or not of intermetallic interactions.

2. Synthesis of metallic nanostructures. The formation of nanostructures of unprecedented size, shape, composition and/or surface functionalization for their application in different fields such as **biomedicine, food storage, or catalysis** will be studied. The utilization of new organometallic precursors and stabilizing agents such as polyfunctional ligands, peptides of biological interest, smart polymers with response to environmental changes or template substrates that host the nanostructures (silica, aluminosilicates or polymers) will be taken into account.

3. Study of activation processes and catalysis. The synthesis of new compounds as efficient catalysts for promoting different catalytic processes will be developed. The corresponding **C-H activation and C-C and C-X bond formation reactions** will be explored. Several chiral metal catalysts will be prepared and tested in asymmetric synthesis. The final products will be a key factor in the development of these processes, as **compounds of biological interest or natural products**. The mechanism of action, the characterization of intermediate species and the possible improvement of the process will be addressed, through the convenient modification of the catalytic structure.

4. Synthesis of complexes with biological properties. Complexes displaying **antitumor, antibacterial, anti-HIV activity** will be developed. Thus, more stable and biologically compatible complexes could be obtained with the aim of reaching more directly the biological target. The structure of these complexes will be modified in agreement with the structure-activity relationship and their possible mechanism of interaction will be studied. Additionally, the selective delivery of chemotherapeutics into tumor cells will be afforded by the use of gold- based anticancer peptidomimetics by targeting peptide transporters. Our experience in luminescence will be applied for the design of **complexes for imaging applications useful in diagnostics and therapy**.

5. Who can apply?

At the deadline for the submission of proposals (10/09/2015), researchers (*):

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- shall be in possession of a doctoral degree or have at least four years of full-time equivalent research experience.
- must not have resided or carried out their main activities in the country of Spain for more than 12 months in the 3 years immediately prior to the abovementioned deadline.

6. *Contact person*

Prof. M. Concepción Gimeno gimeno@unizar.es

7. *Applications: documents to be submitted and deadlines*

The documents to be submitted to the contact person are a CV, letter of motivation and 1 letter of reference.

All these documents should be submitted before **July, 1st 2015**.

Please note that:

- Deadline of the next call for proposals for Marie Skłodowska – Curie Individual Fellowships is **September, 10th 2015**.
- Oficina Europea is only responsible for the display of the expressions of interests received by the institutions; further contact and information requests will take place directly between the host institutions and the interested researchers.

(*) Further details on the Call and additional eligibility criteria can be found at the [Participants' Portal](#)