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

1. *Interested institution:*

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 organisation 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 Sklodowska Curie Actions)*

☒ Chemistry (CHE)	☐ Environmental Sciences and Geology (ENV)
☐ Social Sciences and Humanities (SOC)	☐ Life Sciences (LIF)
☐ Economic Sciences (ECO)	☐ Mathematics (MAT)
☐ Information Science and Engineering (ENG)	☐ Physics (PHY)

4. *Research / Project Description*

Title: Development of new catalytic processes which would allow the utilization of Carbon Dioxide as Chemical Feedstock.

Project Description

CO_2 is one of the gases whose accumulation in the atmosphere produces the greenhouse effect. Therefore, is of great interest: (i) to reduce their emissions to the atmosphere either by capture and storage methods or by using industrial processes which do not emit CO_2.(ii) to develop new catalytic chemical processes that make possible the transformation of CO2 into raw chemicals (eg MeOH). In line with this, one of the current challenges in chemistry is the development of sustainable catalytic processes that allow the transformation of CO_2 into bulk chemicals. Therefore, development of processes using CO_2 as (C1) building block in the synthesis of organic compounds should be a main goal in the frontier of research in chemistry. An example of that this is possible is in nature, plants everyday perform this operation using solar energy. However, when we try to reproduce these processes in the lab we have to face the high chemical inertness of CO_2.

Having a look to the antecedents on this research field it can be concluded that the use of transition metal catalysts may be crucial in developing processes which would allow to use CO_2 as feedstock. Outcomings from our previous investigation (Angew Chem. Int. Ed. 2012, 51, 12824; ChemCatChem 2013, 5, 3481; Catal. Sci. Technol. 2014, 4, 611 and 2015, 5, 274-279) allows us to hypothesize that the catalytic reduction of CO_2 using hydrosilanes and metal-hydride complexes having a strong donor ligand trans to the hydride as catalysts could be key for developing new catalytic processes to convert CO_2 into products of industrial application. The most active catalysts will be modified to facilitate their immobilization on inorganic supports. Thus, we pretend to prepare heterogeneous catalytic systems active for catalytic transformation of CO_2. At this point, it is important to note that our research team has proven experience in heterogeneous catalysis (see for examples: ChemCatChem 2013, 5, 1133; Catal Sci Technol 2014, 4, 62, and 2015, 5, 1878; and ChemSusChem 2015, 8, 495).

The applicant will be incorporated into the research group Homogeneous Catalysis by Organometallic Compounds of the Instituto de Síntesis Química y Catálisis Homogénea (ISQCH). The research group is lead by Prof. Luis A. Oro, (Highly Cited Researcher, http://sorores.unizar.es/personales/LAO/oro.html) and is formed by 10 permanent scientists of the University of Zaragoza and of the CSIC, as well as a number of pre-doctoral and post-doc researchers of different nationalities. The group possesses a large experience in Organometallic Chemistry and in Homogeneous Catalysis having published more than one hundred research papers in international journals of recognized international prestige in the last five years. The general aim of the research activity of the group is the development of new transition metal organometallic compounds and its applications as homogeneous catalysts including the immobilization on different solid supports. The group is currently financed by competitive research projects from public institutions as well as of contracts with chemical companies. The group undertakes an important work on academic and research formation at all the University levels.

For more information, see:

http://www.isqch.unizar-csic.es/ISQCHportal/grupos.do?id=29

http://sorores.unizar.es/personales/LAO/oro.html

5. *Who can apply?*

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

- 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*

Dr. Francisco José Fernández Álvarez
e-mail: paco@unizar.es

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

- Curriculum vitae
- Letter of motivation
- At least two recommendation letters
- Deadline: June, 15th 2015

Please note that:

- Deadline of the next call for proposals for Marie Sklodowska – 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