

To the LINXS Management Group

Individual Fellowship Application

Place and Date *

Mexico City, Mexico, 3 March 2019

To the LINXS Management Group

Title of application and period *

Application to become a LINXS External Fellow

Name and affiliation of applicant *

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Description of interest and purpose * (*about 3000 chars including spaces*)

I'm planning for a sabbatical visit, 2019-07-01--2020-08-31 at the newly established LINXS-Lund Institute of Advanced Neutron and X-Ray Science at Lund University in close collaboration with Prof. Tommy Nylander, Physical Chemistry, Ass. Prof. Marie Skepö Theoretical Chemistry and Prof. Henrik Stålbrand. I see my role as being able to spearhead research within the biointerface area using neutrons and x-rays. I particularly work with lipid aqueous interfaces, both bilayers and non-lamellar phase on supporting surface, where I will join DYNAMICS WG 3 Dynamics and structure of membranes and their constituents. Thanks to my broad research expertise, which involves the study and development of colloidal and interface systems that include biomolecules, e.g. lipids, proteins and carbohydrates such as cellulose and chitosan for the development of biosensors, tissue engineering materials and controlled delivery systems, I hope to contribute to other working groups as well. In particular I'm also very interested to take part in projects concerned with the interactions of enzymes and other biomolecules or nanoparticles at cellulose aqueous interfaces. Here I'm interested in the development of new processes and technology that can generate sustainable energy and materials without damaging our environment. Since 2011 I've been a member of the American Chemical Society, affiliated to the Colloidal and Surface Chemistry and the Cellulose and Renewable Materials Divisions where I, together with Prof. Orlando Rojas (Aalto University, Finland), organize the "Valorization of Renewable Resources & Residuals Into New Materials & Multiphase Systems" symposium every year.

I've expertise on the use of, apart from Neutron Reflectometry and scattering technique, surface chemistry techniques like the Interfacial Shear Rheometer, QCM, ellipsometry and surface force measurements. For the neutron experiment I was involved in we developed special troughs to study systems at low temperatures. During my sabbatical in Lund I intend to further develop this type of sample environment for liquid interfaces in combination with other techniques as interfacial rheology. One direction of research I would like to pursue is to look at interfacial enzymatic processes at lipid and cellulosic interfaces. In both cases, the degradation processes is associated with the fact that these are water-soluble enzymes acting on a substrate surface that continuously changes due to the enzyme action. These dynamic processes poses challenges in interpretation of data that is well suited to be solved by neutron and x-ray. I will also be committed to increase and extend the LINXS network to the biointerface community (including ACS and Mexico) not yet using neutrons and x-rays.

Regarding resources I will keep my professor's salary from Mexico and was informed that LINXS can provide support in terms of housing and travel costs for my family (wife and two children) and me.

Declaration *

Please state that your organisation (e.g. Head of Department) agrees to your planned work and activities with LINXS, the % of work involved, and the duration foreseen.

☒ ☐ My employer and immediate director is aware and in agreement with my current application to LINXS.

Signature *



José Campos Terán

Professor José Campos Terán

Attachment *

Short CV attached