



**TAIWAN PROGRAM 2019  
EXPRESSIONS OF INTEREST**

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<b>ADDRESS:</b> C/. Serrano, 121. 28006 Madrid	
<b>BRIEF DESCRIPTION OF THE RESEARCH GROUP:</b> <p>Research Group on optical radiation measurements (GIMRO). The activity of this group is concerned with the experimental and theoretical knowledge about optical radiation measurement, from the ultraviolet to the near-infrared, and its interaction with matter, developing methods and absolute standards without the need to external reference or calibration. This activity includes a basic aspect (metrology) and an applied one dealing with the development of measurement systems, detectors and optical radiation sources.</p> <p>At present one of the group objectives is to improve the measurement capabilities of linear optical properties of materials. To expand the capabilities of the current gonio-reflectometer, the only one in the world capable of measuring real retro-reflectance, by: extending the interval of spectral analysis in the near infrared up to approximately 1700 nm; completing the 2D detection system to study the appearance of materials (gonio-chromatism, texture, "sparkle" and graininess); improving the fluorescence measurement capacity; and developing multi-variant processing techniques and algorithms to improve the analysis of information.</p>	
<b>CENTER/RESEARCH GROUP'S WEBSITE:</b> <a href="https://www.io.csic.es/">https://www.io.csic.es/</a>	
<b>NUMBER OF STUDENTS WILLING TO WELCOME:</b> One	
<b>BRIEF DESCRIPTION OF THE STUDENT ACADEMIC BACKGROUND:</b> <ol style="list-style-type: none"><li>1. PhD students are welcome. It is not necessary for the student to have passed a PhD qualifying exam.</li><li>2. The student should have an academic background related to activities of GIMRO, such as light and lighting, colour and imaging, or electro-optical engineering.</li></ol>	



**BRIEF DESCRIPTION OF THE STUDENTS TASK:**

The tasks for the student during the 8 weeks stay at GIMRO will include the following:

1. Familiarization with the operation and control of the gonio-spectrophotometer GEFE.
2. Study on the presence of speckle patterns in the measurement of the BRDF of materials when they are spectrally illuminated using quasi-collimated beams. Broad band illumination could be tested too.

Some authors have recently suggested that the speckle patterns produced by illumination on the surface of the samples could be limiting the uncertainty of spatial uniformity measurements when measuring the BRDF. As a first step in that investigation, this task is proposed to determine whether that speckle pattern is observable or not, and to what degree.

**\*€1 000 FOR LIVING EXPENSES WILL BE THE FINANCIAL CONTRIBUTION FROM THE CSIC CENTER TO THE STUDENTS\***

**Responsible Researcher:** Joaquin Campos Acosta

**Center Director:** Juan Diego Ania Castañón

**ICU Manager:** Eloy Belda San Mateo