CiQUS

Centro Singular de Investigación en Química Biolóxica e Materiais Moleculares

# Conferencia: Contactless determination of the termal conductivity in 2-dimensional systems using two-laser Raman thermometry


## Sebastian Reparaz

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19/03/15

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Aula de Seminarios do CIQUS

12:15 h

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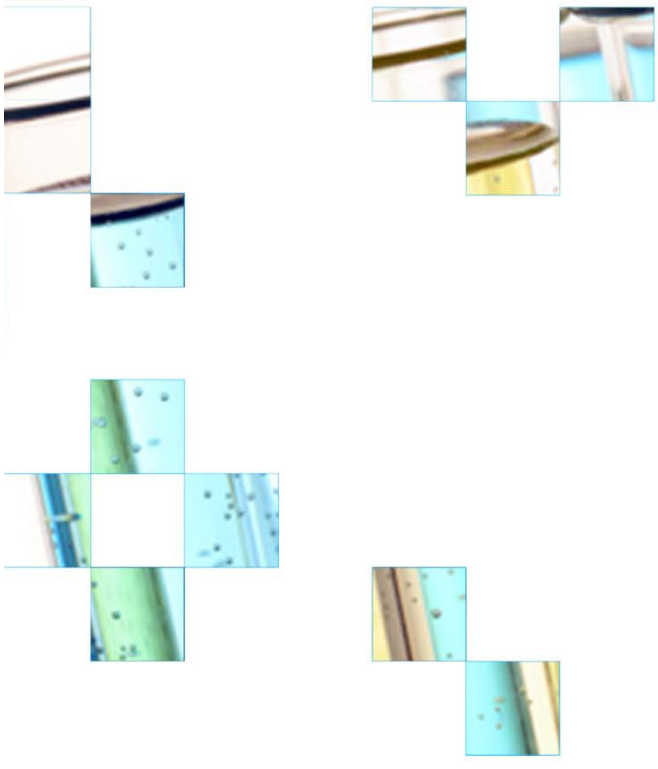

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**Title:** "Contactless determination of the thermal conductivity in 2-dimensional systems using two-laser Raman thermometry"

**Speaker:** Sebastian Reparaz

## ABSTRACT:

In this talk I will describe a novel contactless method to determine the thermal conductivity of 2-dimensional (2D) systems such as Si free-standing membranes, Si phononic crystals, and graphene. The technique is based on measuring the local temperature through the Raman effect. By using a two-laser approach we create a localized hotspot using a high power laser, whereas the local temperature is probed using a low power laser. We show that this method is particularly useful to self-consistently obtain the thermal conductivity in a wide temperature range, approximately from 100 K to 1200 K, and with an accuracy lower than 5%. In addition, we show that high spatial resolution (< 300 nm) temperature maps can be obtained in 2D systems leading to an accurate determination of the temperature distribution in low dimensional systems.