Q1-2019 Newsletter: M13 General Assembly and patent landscaping

March 2019

New Year saw the M13 General Assembly hosted in Cambridge, England, with Partner updates ranging from ultra-high molecular weight BCPs characterisation to initial etch results on glass.

Elucidare reviewed the commercial landscape for subwavelength nanotexturing and highlighted emerging consumer and industrial applications. With over 100 moth eye patents published during Q1 alone, evidently this technique has inspired innovators worldwide.

Funded through the European Union's Horizon 2020 research and innovation programme, SUN-PILOT will develop pilot-scale industrial processes for producing nanotextured products. Our primary commercial applications are in the optics and automotive industries.

The M13 General Assembly was hosted by Elucidare Limited in the riverside buildings of Darwin College, Cambridge. Partner representatives met to present updates on technical progress and milestones.

Darwin College is a constituent college of the University of Cambridge. Founded on 28 July 1964, Darwin was Cambridge University's first graduate-only college, and also the first to admit both men and women. The college is named after one of the university's most famous families, that of Charles Darwin.

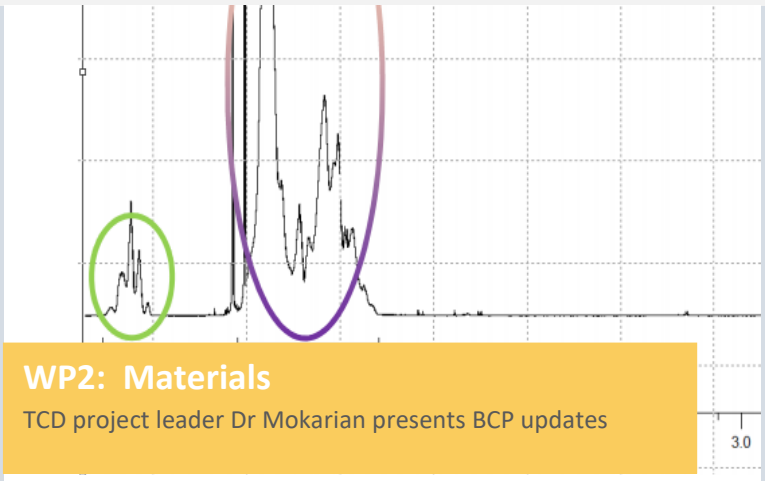
www.elucidare.co.uk dar.cam.ac.uk

M13 gathering hosted at Darwin College

Partners meet in Cambridge to discuss progress

Representatives from FHG-IAP and University of Bordeaux presented initial findings on the design and production of ultra-high molecular weight BCPs. FHG outlined how process know-how developed at its pilot plant centre will be leveraged to research the production of these molecules, and support expansion from lab to pilot scale.

iap.fraunhofer.de



WP2: Materials

TCD project leader Dr Mokarian presents BCP updates

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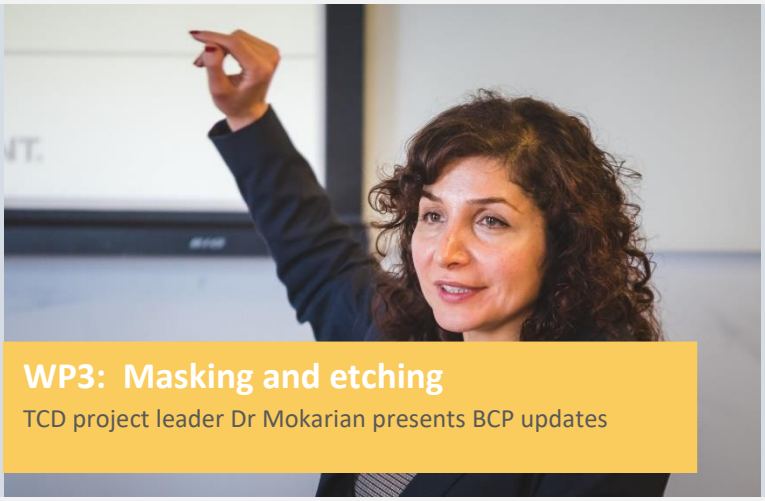
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 760915



WP3: Masking and etching

TCD project leader Dr Mokarian presents BCP updates

Parvaneh Mokarian (pictured) reviewed the block copolymer materials received from University of Bordeaux, comparing their specifications with commercial offerings. BCP etching masks have been developed for a variety of optical and metal substrates included fused silica and steel respectively.

AMO GmbH presented initial results of etch achieved on fused silica and aluminium. Issues associated with steel corrosion were noted and discussed.

ambercentre.ie amo.de

WP7: Elucidare reviews patent onslaught

Over 100 moth-eye patents filed worldwide during Q1-2019

Patent applications citing the design, construction or application of subwavelength moth eye structures have risen exponentially over recent decades. During Q1-2019 over 100 filings were published by the US, WIPO and European patent offices, compared to 22 in Q1-2010 and just five in the whole of 2000. Fuelling interest is the growing recognition of the ability for subwavelength textures to support functions including antimicrobial and antireflection.

Elucidare reviewed recent patent activity with special focus on non-contact patterning techniques.

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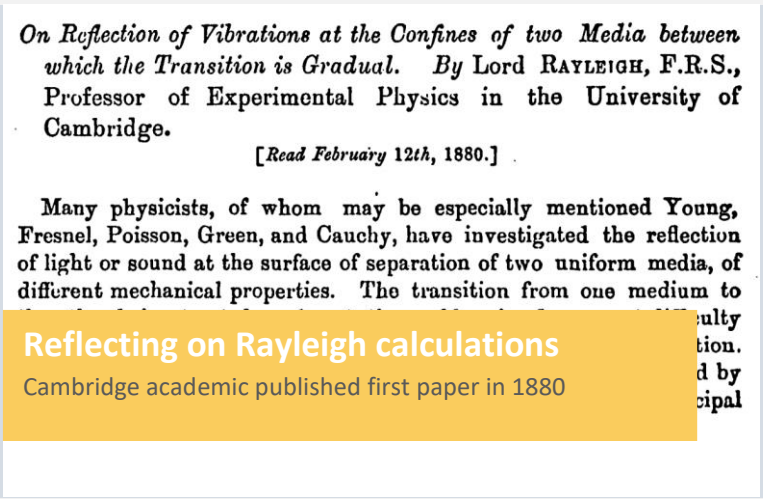

On Reflection of Vibrations at the Confines of two Media between which the Transition is Gradual. By Lord RAYLEIGH, F.R.S., Professor of Experimental Physics in the University of Cambridge.

[*Read February 12th*, 1880.]

Many physicists, of whom may be especially mentioned Young, Fresnel, Poisson, Green, and Cauchy, have investigated the reflection of light or sound at the surface of separation of two uniform media, of different mechanical properties. The transition from one medium to

Reflecting on Rayleigh calculations

Cambridge academic published first paper in 1880

During the General Assembly dinner held at Darwin College, Elucidare CEO David Nugent presented the first ever study on subwavelength nanostructures and their role in suppressing optical reflections at an otherwise abrupt interface.

Published in 1880 by the London Mathematical Society, the manuscript by Lord Rayleigh considers light transfer from one medium to a second through a graded index layer. The century-old paper predicted reflections could be reduced to around 4.5% of their pre-textured value. “Can this figure be bettered by the SUN-PILOT technique?” Nugent asked.

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