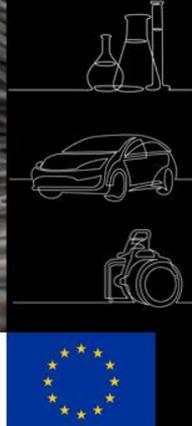


sub-wavelength nanostructures fabricated on a pilot manufacturing line using self-assembling block copolymers

SUNPILOT



Q3-2019 Newsletter: MNE 2019 presentation and industry developments September 2019

SUN-PILOT was presented by AMO GmbH at the Micro and Nano Engineering (MNE 2019) conference, held on the island of Rhodes. This proved an ideal opportunity to showcase the potential for BCP materials to create nanostructures tailored to specific applications.

Also covered in this newsletter are updates from the optics and automotive industry. Highlights from a webinar on optical interference coatings for high performance lasers, plastic recycling partnerships for Jaguar Land Rover, and surface biomimicry at Ford Motors Co. Lots to reflect on!

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.

23-25 Sep 2019: The 45th International Conference on Micro and Nano Engineering (MNE 2019) took place on the island of Rhodes (Greece).

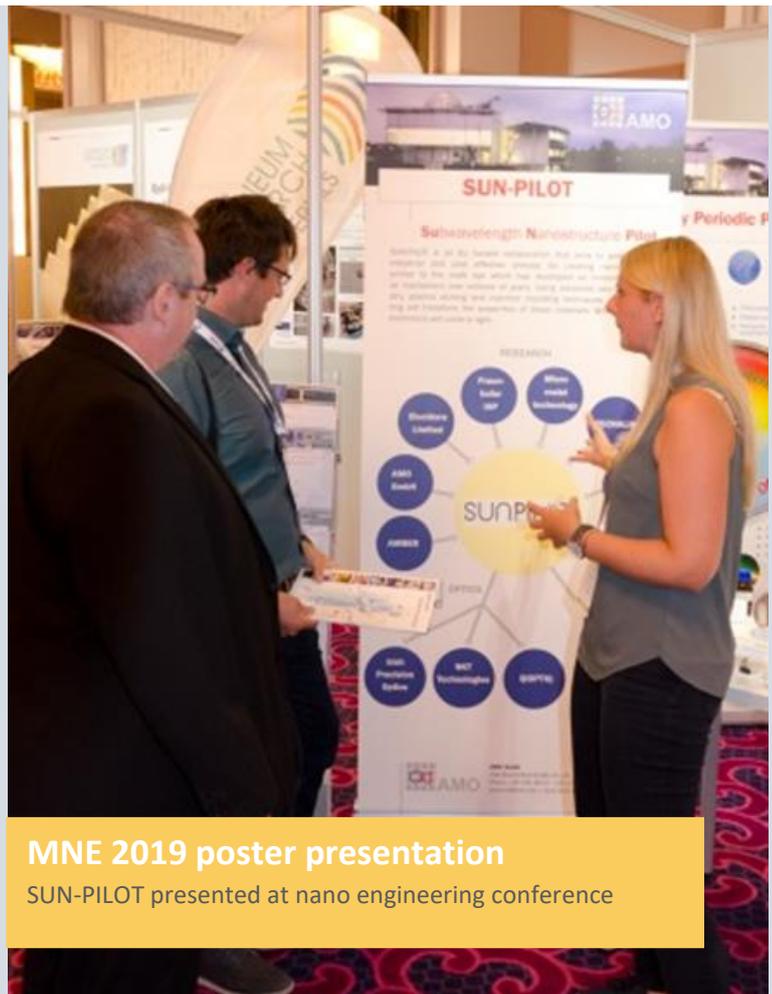
MNE is one of the core international conferences on fabrication and manufacturing techniques at the micro- and nanoscale, and on their applications in electronics, photonics, chemistry as well as in environmental, energy and life sciences.

AMO regularly contributes to the scientific program of MNE and uses its audience to showcase its nanofabrication capabilities and recent results.

AMO's role within the SUN-PILOT consortium is the development of dry etching processes for the transfer of periodic nanopatterns formed by block copolymers (BCPs) to a variety of substrate materials, including optical glasses and sheet metal.

"As Europe's major conference on nanofabrication, MNE is an ideal opportunity to showcase the SUN-PILOT project", said Jens Bolten, group leader of Nanostructuring at AMO. "Through the conference and exhibition we could reach people from all over the world and give an idea of the potential of the BCP materials developed in the project to create nanostructures tailored to specific applications, such as antireflective optical surfaces or car interior parts that combine interesting visual effects with surface functionalization, e.g. oleophobicity."

amo.de mne2019.org



MNE 2019 poster presentation
SUN-PILOT presented at nano engineering conference

For more information contact: info@sunpilot.eu

 sunpilot.eu



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



21 Aug 2019: Carmen Menoni, Distinguished Professor at Colorado State University, gave a highly informative webinar on Optical Interference Coatings for High Performance Lasers.

Demand for robust antireflection (AR) coatings has intensified following introduction of chirped-pulse amplification (CPA) lasers. Capable of petawatt outputs, CPA installations are vulnerable to damage due to the limitations of the AR coatings applied to optical elements. Solving this bottleneck is a major research effort at CSU.

Accessible via LaserFocusWorld, the webinar was sponsored by Alluxa, Inc. and Chroma Technology.

laserfocusworld.com alluxa.com chroma.com

The scaling of CPA lasers to relativistic intensities is challenged by damage to optical components

- Chirped pulse amplification has enabled the generation of unsurpassed power and intensities
- Critical optical components in the CPA laser system, beam directors, crystal amplifiers and compressor gratings are coated with multilayer dielectric stacks

Initial short pulse
Short-pulse oscillator
The pulse is much shorter
Martinez stretcher
A pair of gratings disperses the spectrum and stretches the pulse by a factor of a thousand
A second pair of gratings reverses the dispersion of the first pair and recompresses the pulse.

CSU webinar AR coatings for HP lasers
Limitations of multilayer AR coatings were discussed

Optics (1985)
https://en.wikipedia.org/wiki/Chirped_pulse_amplification
8/21/2019

18 Jul 2019: Jaguar Land Rover partnered with BASF in a pilot research project designed to tackle the challenges of plastic waste. The ChemCycling project takes plastic waste and recycles it into premium material for potential use in future Jaguar and Land Rover models.

Recycled plastic material will be tested on prototype production parts in the all-electric Jaguar I-PACE to ensure it meets Jaguar Land Rover's exacting quality and safety standards.

Increasing the recyclability of automotive plastics through the reduction in polymer types and additives used to create functional surfaces is one objective of SUN-PILOT.

jaguarlandrover.com

Jaguar Land Rover trials plastic recycling
BASF partnership seeks to recover monomers from waste

09 Sep 2019: Plastics News reported on the development of bioinspired automotive plastics at Ford Motor Co. Speaking at the Society of Plastics Engineers Automotive Composites Conference & Exhibition, Cynthia Flanigan, Ford's chief engineer of vehicle research and technology, said the automaker is looking to nature for inspiration — mussel shells boast rigid surfaces that naturally repel bacteria and inhibit its growth, for example — as well as the opportunity for composites to improve noise, vibration and harshness in vehicle cabins.

plasticsnews.com

DRIVING MATERIAL
Cynthia Flanigan
Chief Engineer,
Ford Motor Co.

Ford Motor discusses bioinspired plastics
Chief Engineer foresees biomimicry in functional surfaces

Image credit: Audrey Laforest

