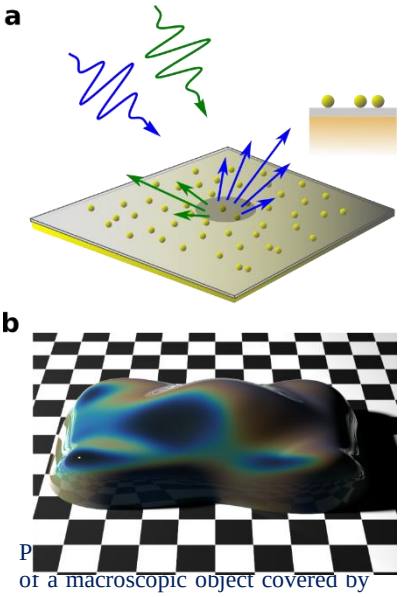
Two-year postdoc position at Institut d'Optique (Bordeaux)

Optical metasurfaces producing brand-new appearance

Education desired: Applicants should hold a PhD in physics, with experience in nanophotonics (characterization, modeling and fabrication). They should have excellent scientific writing and oral communication skills. They must be able to work in a collaborative and dynamic research environment.



P of a macroscopic object covered by a disordered metasurface specifically designed. **a.** Sketch of the metasurface. **b.** Appearance obtained by our nano-rendering tool. The appearance of the object drastically changes when moving around the object or changing the light source position.

Visual appearance is a very common feature of many objects, and is encountered and used in our daily life as a crucial ingredient for determining the desirability or usefulness of objects. Our group has recently successfully implemented the first tool that predicts the appearance of disordered metasurfaces and has designed several metasurfaces that produce brand-new appearance. The produced images provide much more attributes than earlier studies on metasurface colors, as they include coherent (specular) and incoherent (diffuse) scattering, reflection haze, shading effect, radiosity. We have not yet published any results.

Job description (Starting date: Sept-Oct 2020**):** The designed metasurfaces are presently fabricated by our collaborators of an ANR French project (2019-23), using bottom-up and top-down techniques to demonstrate large (unfortunately, polydisperse) and virtually perfect (unfortunately, small) metasurfaces. With this opening position, we engage the caracterisation of the metasurfaces with our new setup and with a new one to be implemented. The postdoc will be in charge of supervising all the ingredients leading to a successful demonstration of the effects, will be in permanent interaction the colleagues who fabricate and will make the characterization.

Please send your detailed CV to **philippe.lalanne@institutoptique.fr** and **kevin.vynck@institutoptique.fr** with contact references.

[1] P. Lalanne and P. Chavel, Laser Photonics Rev. **11**, 1600295 (2017). "Metalenses at visible wavelengths: past, present, perspectives"
[2] M. Bertrand, A. Devilez, J-P. Hugonin, P. Lalanne, K. Vynck, J. Opt. Soc. Am. A **37**, 70-83 (2020). "Global polarizability matrix method for efficient modelling of light scattering by dense ensembles of non-spherical particles in stratified media"
[3] Y. Yang et al., Nature **576**, 248–252 (2019). "A General Theoretical and Experimental Framework for Nanoscale Electromagnetism"