

## The light scattering for color-science nano-technologies

In the era of nano-material science, the development of new technologies for tailoring the material chromatic properties has a paramount impact on design, advertisement, furniture, textile, fashion and ink industries, to cite a few applications, but also on architecture, cinema, artificial lighting, art restoration, etc. In a scenario where technological efforts are currently spent for creating colours just by means of absorption, the present research tackles the advent of a new scientific approach, which merges “colour” and “light-scattering” sciences for re-creating colours via wavelength-dependent diffusion. The project strictly follows an original “hardware rendering” methodology, i.e. proposes a genuine physical reconstruction of natural optical scattering phenomena in different technology contexts, for re-producing the marvelous variety of natural tinges featuring sunsets, noon or sunrises, under a clean or stormy day sky, as often captured by artists in their masterpieces.



On the venue of Como lake, whose light and colours scenarios are celebrated worldwide, in the context of the rich northern-Italy artistic and architectural environment and relying upon the support of flourishing local industries, the present project stems also on a strong and international collaboration, which comprises university partners like “ETH” in Zurich (nano-science and material developer, see <http://www.morbidelli-group.ethz.ch/>), or SMEs as “Bartenbach Lichtlabor” (light design world leader; see <http://www.bartenbach.com/>) and “Next Limit” (Cinema Oscar for techniques in 2002, provider of real-flow and photorealistic rendering numerical simulations; <http://www.nextlimit.com/>).

The activity is in keeping with a broad audience educational programme, which proposes indoor physical reconstruction of spectacular optical atmospheric phenomena as unique perspective for understanding connection between art (fine art, architecture, literature, cinema, photography, etc) and everyday experience of light (see: <http://www.diluceinluce.eu>).

The perspective fellow activities will concerns the design, from the nano-scale up to the macroscopic level, the realization and the optical characterization of new materials and related new optical components/devices. Applicants, with PhD in Physics or Engineering, or with more than 3 year research experience in industry or academy, must have a strong background in experimental optics, with preferential expertise in the fields of light scattering, colorimetric-photometric measurements and/or optical design. Moreover, they should have a pronounced interdisciplinary attitude, being the foreseen research to be performed in tight collaboration with experts in the fields of nano-material science, material engineering, vision psychology and physiology, architecture, lighting engineering, and photorealistic light simulations. Notably, the present call is for two (up to) 24-month research positions: the first one is more oriented to fundamental-science investigations, for candidates mostly interested in future academic positions; the second is more oriented toward new-technology developments, for those interested in future qualified research industrial positions. The research will be performed at the Insubria University Optical Laboratory premises, under supervision of prof. Paolo Di Trapani (PI) (<http://www.optics-di-trapani.it/>) and dr. Fabio Ferri (<http://www.dfm.uninsubria.it/laboferri/>), and in collaboration with the Insubria University Academic Spin-off “Light in Light” srl.

Interested candidates should send as soon as possible their CV to Prof. Paolo Di Trapani ([paolo.ditrapani@uninsubria.it](mailto:paolo.ditrapani@uninsubria.it)) and/or to Dr. Fabio Ferri ([fabio.ferri@uninsubria.it](mailto:fabio.ferri@uninsubria.it)). Recommendation letters might be asked in a second stage. The foreseen contract starting date is between January 1<sup>st</sup> and March 1<sup>st</sup> 2011, but different dates are feasible too upon agreement. Salary and contract duration will be negotiated as well.