Post-Doc Position on 2PP at Politecnico di Milano

Dear colleague,

in the framework of a EU H2020-FET project recently started, we have an opening for a Post-Doc position at the Physics Department of the Politecnico di Milano, Milan – Italy.

The position is for 1 year (renewable for up to 3 years overall). We are looking for a researcher with a PhD title and experience in femtosecond laser micromachining. Specific experience in two-photon polymerization is well evaluated. Below is the abstract of the EU project.

We would be very grateful if you could forward this message to potentially interested candidates.

Requests for further information can be directed to

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Best regards,

Roberto Osellame

Project abstract

Routine clinical use of biomaterials requires the reduction of the economical and ethical costs of biocompatibility tests (ISO10993 EU norm) which are unsustainable for small-medium industries and for the society. In this project we foster an unprecedented breakthrough in in-vivo optical imaging that will radically renew the biocompatibility tests of biomaterials. A micro-structured chip, built by two-photon laser polymerization (2PP), will be implanted in lab animals, host a biomaterial and contain micro-features that guide the spontaneous regeneration of vascularized tissue within a thin gap (0.15mm) in contact with the biomaterial and act as beacons to correct the optical aberrations. The same chip carries a micro-lenses array for in-situ multi-spot imaging, with no need of external high numerical aperture objectives, dramatically improving light penetration in tissue. This chip will recast our thinking of deep tissue in-vivo imaging: the mice carry their own imaging optics, thus reducing substantially image aberration issues allowing unprecedented quantitative and longitudinal analyses of the host inflammatory response to the implant, without sacrificing the mice at each time step. The project will allow unique quantification of the immune reaction to biomaterials at the cellular level (scientific impact), reduce (at least threefold) the number of used animals (societal impact) and the costs of biomaterial discovery (economical impact), and will Refine and Reduce protocols for biocompatibility on a single revolutionary device (regulatory impact). We open here a new visionary path for in-vivo imaging with high Replacement potential in oncological pharmaceutics and immune-therapies. 3 academic units, 2 public research institute and 2 SMEs ensure a highly inter-sectorial/interdisciplinary approach encompassing non-linear intravital imaging, bioengineering design, 2PP material science, biocompatibility protocols design and numerical simulations of immune response.

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