SHIFT 2022 PROGRAM / BOOK OF ABSTRACTS

Universidad de La Laguna

Shift'22 TENERIFE

Program

SHIFT 2022 - Spectral sHaping For biomedical and energy applicaTions

TENERIFE, CANARY ISLANDS

10-14TH OCTOBER, 2022

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WELCOME TO THE SHIFT 2022

Dear colleagues

Since last time we met at SHIFT 2017, it´s been tough years for everyone. Pandemic, lockdowns, war....But we keep hope. We have gathered here again at Tenerife to share the best of our science. We are really proud to present this impressive program which has been possible because each of you! It is really an honor and privilege to welcome you in person at Tenerife, around 80 universities of 29 countries. Let us meet, share our time and discuss science together again. Let us SHIFT!

It will be an unforgettable week with a quite attractive scientific content, completely assured with your outstanding participation, and also with a stunning social program. We are convinced that SHIFT 2022 implies also the importance of returning to scientific in-person meetings! Scientific conferences have been, and will continue to be, instrumental in the progress of science. It is not only about the talks, the papers published, the posters, the presentations. It is about the personal face-to-face encounters, the discussions during the coffee breaks, by the networking lunches and the gala dinner. It is that brilliant idea or those synergies that could appear sharing the Conference lunch during the excursion to El Teide volcano National Park or during a nice walk through the historical UNESCO World Heritage venue city of La Laguna. Unexpected inspiring ideas and connections, new visions, new approaches are gestated in those moments. Shining a light on biomedical and energy applications: with news insights into the biomedical field to "cure the people", and with groundbreaking achievements in renewable energies to "heal the world", with attention to critical raw materials and strategic minerals. You are making the SHIFT possible! Let us SHIFT again after these uncertain times! SCIENCE will lead the way!

Thank you very much on behalf of my colleagues at the Organizing Committee, and welcome to Tenerife, welcome to the SHIFT!

Dr. Jorge Méndez-Ramos
Conference Chairman SHIFT2022
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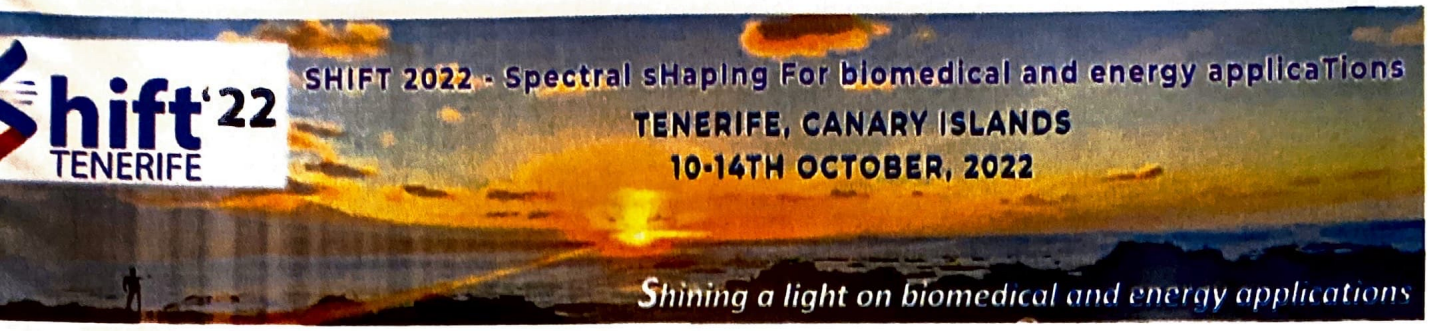

Every particle with a crown: protein corona guided accumulation of upconverting nanoparticles in cancer cells

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Poster
Biomedical Applications

Upconverting nanoparticles (UCNPs) stand out as multifunctional agents that can be used in bioimaging, drug delivery and therapy. In order to use UCNPs as nanomedicines the challenge remains to attain long-lasting blood-circulation, for UCNPs to arrive at the target location. UCNPs present in biological medium are exposed to a mixture of biomolecules and proteins, forming „protein corona". It is detrimental that UCNP-protein complexes would not be eliminated by phagocytic cells. Accordingly, coating the surface of UCNPs with negatively charged molecules (i.e. carboxyl group, silica) allows to create compounds that are easily uptaken and retained by cells.

Little is known about protein corona formation and structure depending on the surface coating of UCNPs and how it affects the cellular uptake. In addition, any surface modification of UCNP will alter size and protein composition of protein corona around the UCNP. For this reason, studies on protein corona formed around differently coated UCNPs are crucial to find the most suitable surface modifications for biomedical application.

The aim of this work was to investigate the protein corona composition and size around citrate, SiO_2 and phospholipid coated $LiYF_4:Yb^{3+}$, Tm^{3+} UCNPs as well as corona's impact on cellular internalization. Physical characteristics of UCNPs in medium containing serum proteins were studied together with UCNPs' interaction with proteins and biologically active molecules. All in all, the surface coating of UCNPs plays a significant role in UCNP protein corona composition, formation and cellular internalization.

References:
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