



A new type of journal on Nanotechnology

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Editorial: A new type of journal on Nanotechnology

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Dear readers of the *All Results Journals: Nano*,

We are pleased to introduce you to *The All Results Journals: Nano* (All Res. J. Nano.). A very particular journal, as it publishes fully indexed articles and reviews that challenge current models, tenets and dogmas. This journal, as part of the family journals we publish in SACSIS, represents the first Total Open Access source for nanotechnology research concerning negative results and will be a valuable resource for researchers all over the world, including those who are already experts and those entering the field.

The All Results Journals: Nano immediate goal is to provide scientists with responsible and balanced information in order to avoid unproductive synthetic nanomaterial routes, improve experimental designs and economical decisions. Many journals skew towards only publishing positive data; that is, data that successfully proves a hypothesis. *The All Results Journals: Nano* is the home for negative or secondary data: experimental documentation of hypotheses that turn out not to be true, or other experiments that do not lead to an advance of a specific hypothesis but are nevertheless a true rendering of that experiment. There is a huge mass of experimental data locked up in lab notebooks that could be of great service to the Nanotech community at large. Many experiments fail to produce results or expected discoveries. Some have even pointed out the different types of negative data we can obtain.¹ This high percentage of failed research can still generate high quality knowledge, as have been presented in our Chemistry, Biology and Physics journals since 2010.² The main objective of *The All Results Journals: Nano* is to recover and publish these valuable pieces of scientific information on the Nanotechnology field.

As we continue publishing negative results, the newer generation of researchers will not waste their time and money repeating the same studies and finding the same results (negative in this case). We believe that negative results are high-level pieces of knowledge that deserve to be published.

The All Results Journals: Nano is a peer reviewed journal developed to publish original, innovative and novel research articles resulting in negative results. This peer-reviewed scientific journal publishes theoretical and empirical papers that report negative findings and research failures in Nanotechnology and all related sub-fields. Submissions should have a negative focus, which means the output of research yielded in negative results is being given more preference. All theoretical and methodological perspectives are welcomed. We also encourage the submission of short papers/communications presenting counter-examples to usually accepted conjectures or to published papers. To add

more interesting content to the journal for our readers, we included the following sections which cover new nanotech pipelines: Review articles, Book Reviews and Research Highlights.

The All Results Journals: Nano on the field

The development of Nanotechnology in the last 30 years allowed to obtain many new materials with properties that differ from those of larger bulk materials. These size-dependent new properties make them ideal for introducing a myriad of novel applications in a wide variety of fields such as in medicine, electronics, biomaterials energy production, and consumer products. Specifically their application in nanomedicine is producing significant advances in molecular detection and imaging, target and multifunctional therapeutics and in prevention and control of diseases.

However, despite the exponential growth of scientific output and creation of intellectual property worldwide in the field of Nanotechnology during the last decades, a similar pattern in product development and commercialization was not achieved.³ This is a common hallmark of innovative and emerging technologies. In fact, the number of new agents approved annually as new medicines is similar to that seen 60 years ago.⁴ It is clear that a way to overcome this gap in the near future is to carry out the design of nanosystems guided by societal needs and not only by scientific curiosity. Yet, another way to speed up this gap reduction is to shed light on the negative results obtained within the nano community.

Which of the wide variety of nanomaterial synthetic methods continuously reported are able to be produced in an appropriate size scale and with a reliable batch-to-batch reproducibility? Which of them has an adequate colloidal stability that could ensure their multifunctionalization in order to obtain more sophisticated products and devices to meet needs not addressed by current technologies (eg: point-of-care ultrasensitive biosensing tools, smart-targeted drug delivery nanosystems)? Which sterilizing methodologies affect/non-affect the intrinsic physiochemical properties of the nanocarrier? Are the assays being used to unravel the interaction of different nanomaterials with living matter carefully and rationally designed in order to generate useful and comparable data?

These are only few examples of questions that arise and need to be answered in order to progress from proof-of-concept feasibility demonstration at the lab scale to a full-scale commercial production. Thus the publication of negative results and not only positive ones would certainly enable to

achieve in a fastest way an overall impact of Nanotechnology on economics, business and society.

In this issue

In this first issue of the journal, we publish one article related to the bucky-amino acid acylation of the Phospho-cytidine-phospho-adenosine (pdCpA) Subunit.

The irreversible adsorption of fullerene (C₆₀) substituted amino acids to the hydrophobic resin bead surface during solid phase peptide synthesis leads to low yields. Due to the challenge in preparing sufficient C₆₀-substituted phenylalanine (Bucky amino acid, Baa), an alternative route to fullerene-substituted peptides was investigated. In their article, Professor Andrew R Barron and his colleagues have performed the synthesis of the amino acylated phospho-cytidine-phospho-adenosine subunit (pdCpA-Baa) prior to enzymatically ligating it to a truncated tRNA. However, despite their successful synthesis of the cyanomethyl ester Fmoc-Baa-OCH₂CN, no reaction is observed between the hydrophilic pdCpA and hydrophobic Baa even in the presence of cationic surfactant or in DMF solution. As an alternative method a N,N'-diisopropylcarbodiimide coupling route was investigated, which despite the presence of an appropriate m/z in the MALDI-MS did not lead to an isolable product. The successful coupling of a hydrophobic perfluorophenyl ester (Fmoc-Gly-OPfp) to pdCpA suggests that it is steric bulk rather than miscibility what precludes the Baa coupling.

The second paper of this first issue of *All. Res. J. Nano.* is a book review by Prof. Franco focused on Atomic Force Microscopy (AFM). AFM is one of major scientific tools responsible for the emergence of modern nanotechnology. This general book about AFM describes the technique in an introductory yet profound manner. Prof. Ricardo Franco made a useful description of it: "The most interesting feature of the book is that although it can be considered an introductory text to a technique that is becoming more and more a microscopy technique of wide applicability, specialized users of the technique can also find it extremely motivating to go over its more dedicated content".

These two articles open the venue for new submissions to the journal; comments on the articles are also welcomed and our registered readers are invited to send them to foster debate.

Remarks

Nanotechnology is recognized as one of the six key enabling technologies (KETs) according to a Communication of the European Commission, showing applicability in several different sectors. On the other hand, scientists spend much of their time doing work that does not get published. The time and money spent to produce such data (that we like to call secondary data) is essentially wasted. Should not we make an effort to increase our society's return on its investment? *The All Results Journals: Nano* is taking it. Our goal is to establish an online medium for the publication of the negative results that otherwise may be lost. We request now the collaboration of all Nanotech researcher community to succeed.

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