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Editorial Open Access

Open Access Benefits Nanotechnology Development

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The implication of Nanotechnology for aeronautic and aerospace industry is huge. The technology can impact virtually all aircraft and space craft components and systems. It potentially provides stronger and lighter materials that promise improved performance. Nanotechnology also offers alternative solutions to well-established techniques, such as greener coatings and more efficient fuels. It also enables tailoring of material properties according to required functions. Aeronautic and aerospace industry is at the frontier of nanoscale research. The advancement made through aeronautic and aerospace applications will impact all kinds of products and production processes across all industrial sectors.

Nanotechnology has gone through rapid development in the last two decades. It attracted much media buzz and it is well agreed upon that its potentially disruptive revolutionary is undeniable. However, nanotechnology is still in its nascent stage. Recent advances in nanoscale research are closer to nanoscience than to nanotechnology. There is a considerable delay between the development of conceptual new technologies and the transfer of such developments into commercial products. The reality is that nanotechnology is from years being able to fulfil that expectation. It is projected 20 -50 years of development is needed to realize the full benefits of nanotechnology.

Open access as a new model of publishing research findings, promises open science and may help to speed up the development of nanotechnology. Open access journals and archives provide free availability of scholarly journal publications over the Internet. It is an emerging model of scholarly communication.

The current model of academic publishing does not promote borderless free scholarly communication. The main issue with the traditional publishing model is the rising price of the work published in academic journals, a serious problem that affects all of us in academia. Traditionally, university libraries pay subscription fees so that students and faculty can get easy and free access to the journals that they need. However, in the last two decades, a more limited number of commercial publishers have taken over the publication of top-tier journals. Consequently, the prices of subscriptions have skyrocketed. On the other hand, new journals focus on special fields mushroomed in recent years. Faced with sharp increases in subscription fees and higher demand for new subscriptions, many libraries' budgets for periodicals have been stretched thin, and eventually most will be forced to make substantial cuts in journal subscriptions or other library resources. With open access, the author bears the cost of publishing. For readers, it is free of price barriers, such as subscriptions, licensing fees, pay-per-view fees.

According to Dr Arthur Carty, the former National Science Adviser for Canada's Prime Minister, open access might facilitate an 'effective global information system' that promises to greatly improve the accessibility of results of research. More importantly, open access may cultivate "a culture of open access and sharing", which especially will benefit fundamental researches. After all "knowledge grows when shared".

The open access models benefit not only readers but also authors. Articles published on open access journal are available to readers around world free of charge. The research results will be reviewed and cited by a wider research community, which in turn will increase the impact of the research results. The first open access journal, as far as I know of, is Optics Express. Soon after its launch in 1997, it raised to the top rank in the field of optics. One of the main factors of its success is the open access. Open access increases the citation of articles and in turn the impact factor of the journal increases.

Although open access is still an emerging model of scholarly publishing, it gained ground in the research community. Top publishers move towards open access as well. In 2006, New York/Heidelberg, Springer and the Nano Research Society launched Nanoscale Research Letters (NRL), which was the first nanotechnology journal from a major commercial publisher to publish articles with open access. It "presents a novel type of platform for ultra-rapid exchange of information on important scientific achievements in nanotechnology", commented Dieter Bimberg, Executive Director of the Solid State Physics Institute at the Technical University of Berlin and a member of the NRL Board. Indeed open access will benefit all field of studies not only nanotechnology.

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