



# The Deepening Impact of Materials Science

By Esther Levy\*

The excitement surrounding materials science has never been greater. High hopes are being placed on rapid technological developments through advancements in this field, as reflected in the recent dramatic increase in activity in this area: More research, more publications, more conferences, more citations; and researchers from all branches of science are exploring this promising field of research.

The growing interest in the materials sciences is illustrated by the steady, year by year increase in the ISI Impact Factor<sup>[1]</sup> (IF) of most major journals publishing in this field. As can be seen from Table 1, 2002 was no exception. Of particular note is the sharp rise in IF of *Advanced Materials*, to an impressive 6.801. This all-time high further strengthens *Advanced Materials*' position as the leading primary research journal in the

Table 1. 2002 ISI Impact Factors [1] for selected journals (those publishing peer-reviewed, original research, to a significant extent in the area of materials chemistry and physics). Data taken from the ISI Journal Citation Reports 2002.

Journal	2002 IF
<i>Advanced Materials</i>	6.801
Nanoletters	5.033
<i>Advanced Functional Materials</i>	4.656
<i>Appl. Phys. Lett.</i>	4.207
<i>Chem. Commun.</i>	4.038
<i>Chemistry of Materials</i>	3.967
<i>ChemPhysChem</i>	3.862
<i>Macromolecules</i>	3.751
<i>J. Phys. Chem. B</i>	3.611
<i>Langmuir</i>	3.248
<i>Macromol. Rapid Commun.</i>	2.901
<i>J. Mater. Chem.</i>	2.683

materials sciences. *Advanced Functional Materials*' debut Impact Factor of 4.656 is also noteworthy, placing this full paper sister journal to *Advanced Materials* at the top of the list of materials science journals that publish full papers and a remarkable third overall. This is certainly a convincing indicator that this journal is off to an exceptionally good start.

Materials science has also come into its own with respect to the other physical science disciplines. This is aptly illustrated

by comparing the 2002 IFs of the leading journals in materials science, chemistry, physics, and polymer science (see Table 2). Although the total number of citations is still higher in the more traditional fields, in terms of number of citations per article, they are on par.

Table 2. A comparison of the 2002 ISI Impact Factors for the leading journals in materials science, chemistry, physics, and polymer science.

Journal	2002 IF
<i>Advanced Materials</i>	6.801
<i>Phys. Rev. Lett.</i>	7.323
<i>J. Am. Chem. Soc.</i>	6.201
<i>Angew. Chem. Int. Ed.</i>	7.671
<i>Macromolecules</i>	3.751

So what has contributed to this sudden surge of interest in the materials sciences? A major contributor is undoubtedly nanoscience; an area believed to be crucial for future technological developments. The number of articles in this area has increased dramatically over the past few years and the number of citations per article is well above average (when compared to other materials science topics). The interest in all things "nano" is also reflected in the number of articles downloaded from the online journals in Wiley-InterScience, where six of the top ten downloaded communications from *Advanced Materials* in the time period January–September 2003 cover aspects of nanoscience (see Table 3). In addition, the two most popular recent *Advanced Materials* review articles are on nanomaterials ("Nanoengineering of Particle Surfaces" by F. Caruso, *Adv. Mater.* **2001**, *13*, 11; and "One-Dimensional Nanostructures: Synthesis, Characterization, and Applications", by Y. Xia, P. Yang et al., *Adv. Mater.* **2003**, *15*, 353).

A further indication of the interest in this field is provided by the recently published special issue of *Advanced Materials* on 1D nanostructures. This issue, organized by guest editors Younan Xia and Peidong Yang, was a resounding success. Within days of online publication, the review article became most highly downloaded (and presumably most highly read) article in the whole of Wiley-InterScience for that month and a leap in PDF downloads from *Advanced Materials* from an average of 100 000 per month to over 130 000 per month was observed as a result of publication of this special issue.

This increased activity in the materials sciences has certainly had an effect on *Advanced Materials*, particularly in

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Table 3. The 10 most downloaded *Advanced Materials* communications in the time period January–September 2003.

Title	Authors	Citation
Semiconductor Nanorod Liquid Crystals and Their Assembly on a Substrate	L.-S. Li, A. P. Alivisatos	<i>Adv. Mater.</i> <b>2003</b> , <i>15</i> , 408
Self-Assembled Surface Patterns of Binary Colloidal Crystals	V. Kitaev, G. A. Ozin	<i>Adv. Mater.</i> <b>2003</b> , <i>15</i> , 75
Photonic Papers and Inks: Color Writing with Colorless Materials	H. Fudouzi, Y. Xia	<i>Adv. Mater.</i> <b>2003</b> , <i>15</i> , 892
Electrophosphorescence from a Conjugated Copolymer Doped with an Iridium Complex: High Brightness and Improved Operational Stability	D. Moses et al.	<i>Adv. Mater.</i> <b>2003</b> , <i>15</i> , 45
Nanobelts, Nanocombs, and Nanowindmills of Wurtzite ZnS	Z. L. Wang et al.	<i>Adv. Mater.</i> <b>2003</b> , <i>15</i> , 228
Conductive Core-Shell Particles: An Approach to Self-Assembled Mesoscopic Wires	M. Himmelhaus et al.	<i>Adv. Mater.</i> <b>2003</b> , <i>15</i> , 1113
Templated Surface Sol-Gel Synthesis of SiO <sub>2</sub> Nanotubes and SiO <sub>2</sub> -Insulated Metal Nanowires	N. I. Kovtyukhova et al.	<i>Adv. Mater.</i> <b>2003</b> , <i>15</i> , 780
Morphogenesis of One-Dimensional ZnO Nano- and Microcrystals	P. Yang et al.	<i>Adv. Mater.</i> <b>2003</b> , <i>15</i> , 402
Single-Step Self-Organization of Ordered Macroporous Nanocrystal Thin Films	B. A. Korgel et al.	<i>Adv. Mater.</i> <b>2003</b> , <i>15</i> , 971
A Novel Method for Preparing Copper Nanorods and Nanowires	Z. Liu, Y. Bando	<i>Adv. Mater.</i> <b>2003</b> , <i>15</i> , 303

terms of number and quality of manuscripts submitted to the journal. Over the past eight months since the last editorial<sup>[2]</sup> the number of manuscript submissions has risen by a further 50 % and we are currently receiving around 150 manuscripts per month. Naturally we are very pleased that researchers wish to publish their best papers in *Advanced Materials*. Unfortunately, there is a downside: due to the limited available space in the journal, we are being forced to reject an increasing number of manuscripts, and currently have a rejection rate of over 70 %. It is of course disappointing to have a paper rejected, not least because this leads to a delay in publication. We certainly prefer accepting manuscripts—therefore our request to our authors to be more self-critical when deciding where to submit manuscripts. Only top-quality work representing a significant breakthrough of general interest to the broad and heterogeneous readership of *Advanced Materials* should be submitted to the journal. Authors should also take into account that in particularly fast moving areas, for example, nanoscience, what was an important achievement as little as 1–2 years ago may no longer be significant or novel enough for publication in *Advanced Materials*. In this manner we—the editors, referees, and authors—can all invest our time and effort most effectively.

The journal has also made swift progress in other respects, with significant improvements to our author, referee, and reader services. For example, a pay per view function has been available in Wiley-InterScience since April, allowing non-subscribers to purchase individual journal articles. A major overhaul of Wiley-InterScience also took place recently, resulting in a more attractive, multifunctional journal home page as well as optimized navigational architecture.

Since April we have been printing the digital object identifier (DOI) associated with an article at the foot of the first page of that article. DOIs are essential for the electronic linking of all journals (e.g., through CrossRef), for the permanent

archiving of articles, and for authors, who through the DOI can easily provide a link from their home page to their article in the journal. These DOIs also make it possible for us to present articles electronically in EarlyView weeks before publication in an issue. We have already started with this service for papers either of a particularly competitive nature or deemed very important by two or more referees.

And last, but certainly not least, *Advanced Materials*' editorial office system has been upgraded. The new system allows us to more efficiently keep track of our authors and their manuscripts, from manuscript submission to publication, and should lead to a further reduction in publication time. The most visible changes for our authors and referees are home pages on which they can submit and track manuscripts, and prepare and send referee reports.

We hope you enjoy the innovations brought to you by *Advanced Materials*—in the form of publications as well as services and features. And we welcome any feedback you may have. How else can we most effectively continue to enhance all aspects of the journal?



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[1] The Impact Factor (IF) of a journal in 2002 is defined by the Institute for Scientific Information (ISI) as: (the number of citations made in all journals published in 2002 to articles published in the journal in 2001 and 2000) divided by (the number of articles published in the journal in 2001 and 2000). Full details are available from the ISI, Philadelphia at <http://www.isinet.com>.

[2] "15 Years of *Advanced Materials*: Past and Future", E. Levy, *Adv. Mater.* **2003**, *15*, 13.