Editorial: What makes a good review?

Laser & Photonics Reviews – Two years of excitement and innovation

Don't be surprised if you see Laser & Photonics Reviews cover pages presented by colleagues on conference talks about ground-breaking findings. Since Laser & Photonics Reviews (LPR) was launched, the journal has managed to attract the best-known researchers in the field. Although still very young – not even two years have passed – Laser & Photonics Reviews enjoys an excellent reputation in the optics community. Therefore, it is time to thank all our contributors who trusted us and who have not been afraid to invest their efforts and skills to present outstanding contributions to their fellow researchers.

What does our journal have to offer and what defines a "good review"? Reviews are a very special type of scientific publication. A review's originality lies in sorting, collecting and highlighting existing facts rather than in presenting new results and unpublished findings. One of the first questions a new LPR author may ask is: What defines a Laser & Photonics Review? Answer: An LPR review gives a concise overview of a certain currently relevant topic within the optical sciences including all necessary information to understand the needs and developments of that field, the problems and methods used, as well as the latest findings to overcome the most pressing challenges. The introduction of each article is meant to spark the interest of the reader and position the content of the article within the general context of the research field. The level of sophistication is such that graduate students can follow the introduction. That is because they are the ones who need to find their way into the subject and possibly overcome our current limits. Why do we need this kind of research? Where are we heading to? What are the problems and how can we solve them? What is the long-term aim and goal of our efforts? If those questions are properly addressed, the key for a profound understanding is established. The main sections are technical in nature with formulas, tables and charts useful for the specialists as reference as well as for the interested reader for orientation.

Nowadays, where powerful search engines are available, reviews have to point to the key references that stick out of the myriads of articles available on the subject rather than present an exhaustive reference list. An LPR review is supposed to make people understand difficult and far-scattered information in the most elegant and intuitive form. Thus, a "good review" is when the reader finally gets the impression that they have learned something exciting, something they didn't know before.

Some people do think a little differently about what a good review means. Thus, a further criterion may be its citation rate. Disregarding the dependence of the citation rate from the topic chosen, reviews with high data content, like those including tables, charts or spectra, are considered best. Here, the review acts as a database for information not yet available in handbooks or similar data sources, see Petrov et al. [1] as an example. On the other hand, purely descriptive articles about his or her own group's experimental setup, computer code or specific results seems less attractive, unless it bears an ingenious idea that can be generalized for other purposes.

What have we achieved so far? If you take a look at our journal homepage (www.lpr-journal.org), browse through our previous issues or visit our *Early View* web page you will soon get an idea of our topical diversity and article style. The average LPR article is 19 pages long, with 85% of all reviews being within the 15–25 page range, which is commonly considered as an appropriate length to present current research topics that have emerged within the past 5–7 years. However, depending on the subject the article length can vary greatly. For example, A. A. Kaminskii wrote an 85-page monographical article about laser crystals and ceramics [2]. This paper, together with Petrov et al. [1], Moloney et al. [3] and Birkl and Fortagh [4], belongs to the most-cited articles so far. The most popular articles, i.e. those with the highest fulltext download numbers, are Phillips et al. [5], reporting on ultraefficient inorganic solid-state lighting, Birkl and Fortagh [4], giving an insight into microtraps for quantum information, and Moloney, Hader and Koch [3] who reported on the quantum design of semiconductor active laser materials.

Up to issue 5/2008, Laser & Photonics Reviews has published 36 articles including topics like metamaterials, THz lasers and optics, solid-state lasers and light sources, quantum information processing, biophotonics, laser materials, fiber optics, ultrafast lasers and their application, plasmonics, or multiphoton microfabrication. In addition, LPR also promotes contributions that on first view might appear as scientific niche or borderline subjects like astrophysical plasmas [6], photon management in solar cells [7], optical angular momentum [8] and many others. Especially the latter articles are meant to broaden our view on what photonics really has to offer. Look around – optics and photonics appear nearly everywhere!

For the first time we will present a Laser & Photonics Reviews issue dedicated to a special topic, namely *Fiber Optics*. With five contributions we cover different aspects of this very diverse and important field of optical research, starting with large-mode-area fibers for high-power lasers (p. 429), optical sensing with photonic crystal fibers (p. 449), applications like all-optical virtual private networks (p. 460), and fiber-optic sensor active networking (p. 480) to parametric amplification and processing (p. 498). In addition, Lalanne et al. and Hartmann et al. report on photon confinement and quantum many-body phenomena in cavities, see p. 514 and p. 527, respectively.

We hope that you enjoy this collection of articles that once more demonstrates the excitement and innovativeness of laser and optical sciences.

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