Year in Review

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Editor-in-Chief

Last month I submitted my annual performance report to the SPIE Board of Editors and Publications Committee to support their oversight role of *Optical Engineering*. As in previous years, the report included highlights on journal publications, performance, and editorial board changes along with planned activities and actions to keep the journal thriving. This year, however, it also included a more strategic response to a challenge from the Publications Committee to achieve a step-change in journal prestige and peer ranking. Responding to this challenge raises many fundamental questions as to the primary mission and purpose of this journal that I would like to share in this editorial.

By almost all indicators, *Optical Engineering* continues to serve the optics community well with steady improvement in impact and timeliness. In 2019, both the 2-year and 5-year impact factors increased to all-time highs and the average time to a first manuscript decision decreased to 34 days. The total number of publications in 2019 decreased by 20% from 2018, partly due to a reduced acceptance rate as the editorial board is consistently encouraged to maintain high standards for acceptance. There were five review papers and seven special sections in 2019, with very strong special sections in the fields of polarimetric sensing, ultraprecision optics, and optical fiber sensors. Using the number of downloads as a measure of interest, special section papers garner over three times the reader interest on average relative to regular papers.

Based on download statistics, the highest interest papers in the 2019 volume are special section papers on photonics integrated circuits[1] and nano satellite laser communications[2] followed by review papers on zinc-oxide light-emitting diodes[3] (LEDs) and multiparameter fiber optic sensors.[4] Of the top ten downloaded papers in 2019, half are special section papers, four are review papers, and all are open access. Additional scientific topics of great interest among these papers are conical grating diffraction,[5] convolutional neural networks,[6] LED lighting,[7] ZERODUR structures,[8] polarization visualization,[9] and freeform optics.[10] If you missed these papers during the course of the year, you can find them in the reference list below.

Despite the consistent performance of *Optical Engineering* by these objective measures, there are some fundamental aspects of the journal that limit its ability to rank near the top amongst optics journals in terms of impact factor, which is the primary measure for journal rankings. First, it is a broad-based, engineering-oriented journal with a large constituent community that is not driven heavily by citation. While we strive to maintain high acceptance standards, this is balanced by a desire to serve the scientific communication needs of this broad community. While *Optical Engineering* employs a hybrid open access model, only 10-15% of authors choose the open access option, limiting accessibility to the far majority of published papers. Finally, *Optical Engineering* has a longstanding legacy in the optics community. This affords a level of prestige to the journal but also makes it difficult to achieve any sort of step change without somewhat dramatic action with potential downside risks to its legacy in the community.

For example, achieving major changes in impact factor and peer ranking over a short period of time may require a combination of remaking the journal into smaller, more focused journals that can be optimized to smaller constituencies, significantly increasing acceptance standards and limiting publications to almost half of the current volume, and more aggressively recruiting those few extremely high-citation papers that bias the impact factor for top-tier journals. This would be a significant departure from the *Optical Engineering* of the past 60 years, a downside that would demand significant examination. Such changes may present an inherent conflict between the journal's mission to serve the SPIE community and the quest for top-tier ranking. There are other potential changes, however, that might have a very positive effect without the downside risk. These include changing to a full open-access journal, modestly fine tuning the

scope of each journal section, and proactively pursuing a much more explicit connection between SPIE conferences and *Optical Engineering* to capture leading work from amongst SPIE presenters.

Over my four years as editor-in-chief, I have spent many hours recruiting guest editors for special sections from the SPIE conference program committees and authors. Download and citation statistics consistently show that published papers connected to SPIE conferences in this manner are among the most impactful. Unfortunately, this ad hoc recruiting method ultimately produces a minority of papers published in the journal, and leaves a great amount of high-impact work to be published in competing journals. In my opinion, the step change that the Publications Committee seeks can be achieved without altering the foundational character of *Optical Engineering* through a much more serious and substantive push from all SPIE conference chairs and program committees. Outstanding optical engineering advancements are regularly shared at SPIE conferences. We simply need the best scientific results from these conference presenters to be regularly submitted to *Optical Engineering*. That will continue to be my focus.

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