



## Impact Factor and *Optical Engineering*

Impact factor has become an important metric for evaluating scientific journals in that it describes how often researchers cite material from a journal in their research and publications. For those of you who are not familiar with impact factor, Wikipedia uses the Thomson Reuters definition:

In a given year, the impact factor of a journal is the average number of citations received per paper published in that journal during the two preceding years. For example, if a journal has an impact factor of 3 in 2008, then its papers published in 2006 and 2007 received 3 citations each on average. The 2008 impact factor of a journal would be calculated as follows:

$A$  = the number of times articles published in 2006 and 2007 were cited by indexed journals during 2008

$B$  = the total number of "citable items" published by that journal in 2006 and 2007. ("Citable items" are usually articles, reviews, proceedings, or notes; not editorials or Letters-to-the-Editor.)

2008 impact factor =  $A/B$

Engineering journals typically have lower impact factors than basic science or biomedical journals, and I have often wondered whether the impact factor is less applicable to engineering journals than to science journals. Where a science journal provides results that are used in new theory and experimentation, an engineering journal is intended to provide engineers with new concepts, methods, and approaches. In fact, the readers of these journals may never publish their work. That is, they (practicing engineers) may be consumers of the information and may not generate papers and citations. Under these conditions, the number of paper purchases or downloads may be a better indicator of the value of a particular paper. Nevertheless, impact factor is a gauge that is followed by many scientists, engineers, and publishers.

The impact factors of *Optical Engineering* for 2006, 2007, 2008, and 2009 are 0.897, 0.757, 0.722, and 0.553. In past editorials, I have described why I believe the impact factor fell in 2007 and 2008, and we are taking steps to move *Optical Engineering* in a direction that better serves the community through greater selectivity of more novel research papers and faster publication. However, the 2009 impact factor drop is the result of some completely different factors. The SPIE Director of Publications, Eric Pepper, provided me with a concise SPIE

statement on the change:

When the 2009 impact factors (IFs) were released in June 2010, SPIE observed that the aggregate IF for the Optics subject category dropped by 8.8% from 2008 to 2009 and that the IFs for SPIE journals had decreased even more than that. In a review of these results, SPIE has identified a significant contributor to these declines.

Historically SPIE Proceedings were indexed in the ISI Index to Scientific and Technical Proceedings (now part of Thomson Reuters) and are now included in the Web of Science™ Conference Proceedings Citation Index. However, due to an administrative misunderstanding, the SPIE Proceedings published in 2009 were not indexed before the 2009 Journal Citation Report (JCR) metrics were calculated. This delay in coverage of SPIE Proceedings in Web of Science™ appears to be a major reason for the lower Optics impact factors.

SPIE Proceedings account for a significant number of cites to JCR Optics category journals. The delay of coverage of 2009 SPIE Proceedings in Web of Science™ means that these citations were not included in the 2009 IF calculations. Because SPIE journals are cited relatively frequently in SPIE Proceedings, their 2009 IFs likely were impacted to a greater degree than some other Optics journals.

SPIE and Thomson Reuters have taken steps to correct the situation. The 2010 impact factors will include citations from the SPIE Proceedings published in 2010. Thomson Reuters is working to complete indexing the SPIE Proceedings papers published during the gap in coverage so that all SPIE Proceedings will be covered in Web of Science™ and be available to researchers as well as included in other article-specific citation metrics, such as h-index. However, the 2009 JCR metrics, including impact factor, cannot be recalculated.

We will continue to work towards a higher quality journal with relevant and interesting content. Impact factor is certainly one of the metrics that we will continue to monitor in evaluating our progress.

**Ronald G. Driggers**  
Editor