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Let the Citations Begin



In the research world, especially in academic institutions and research institutes, we are always seeking plaudits from our peers whether we like to admit it or not. This applies to both publications and talks, and in this respect, researchers are no different (in a sociological sense) than writers and performing artists. In the past couple of decades, quantitative statistical measures have become popular for assessing the importance of an individual's research contributions or a research journal's importance to a

particular field. I recall that not too much attention or discussion revolved around citation indexes, the so-called Hirsch (or h-) index or number, and the journal impact factor when it came to promotion/tenure discussions or performance evaluations in the '70s and early '80s. Now they are an integral part of an individual's dossier. Let us briefly examine these metrics.

Citation analysis in the scientific world began in 1960 with the pioneering work of Eugene Garfield and the Institute for Scientific Information (ISI) Science Citation Index covers source literature from 1900 on. There are also a number of other indices readily available thanks to the advent of the Web and search engines. So instead of simply considering the total number of publications by an individual researcher, evaluations now can be done based on parameters such as citation frequency, impact factors, and the like. Thus the h-index attempts to quantify both the scientific productivity and the apparent scientific impact of a given individual. The impact factor of a journal (where the author publishes) is another measure of the quality of the scientific output and this factor is derived from the journal articles' citation frequency (over a specified time interval) and the total number of "citable" items published by the journal over the same time interval. As with most statistics measures, these metrics can be "gamed" to show the numbers in more favorable light. Publishing a higher number of review articles as a tactic to boost the impact factor of a given journal is often cited as an example of this. Other criticisms have been raised both in terms of the overall validity of these metrics as well as their susceptibility to be manipulated. The interested reader may start with the Wikipedia for a discussion of these. For example, a short career span does not help the h-index and it is mentioned that had Albert Einstein died in early 1906, his h-index would have been stuck at 4 or 5!

Such drawbacks with citation metrics apart, the *Interface* Advisory Board came up with the idea of featuring, in this magazine, the most influential papers that have appeared in the *Journal of The Electrochemical Society* (as gauged by citation frequencies). The various Divisions within the Society then undertook the task of providing comments on these hand-picked papers (*i.e.*, feature articles) and specifically perspectives on how they have had an impact on the progress in a given field of solid-state or electrochemical science and technology. The first set of these feature articles appear in this issue. Not unsurprisingly, these classic studies had significant influence on the technical activities of more than one Division as can be gauged by the contents of the feature article pages that follow. Divisions not featured in this particular issue will appear in a follow-up volume of *Interface* slated for appearance in 2010.

I would like to thank Dan Scherson for spearheading the IAB discussions which led to these feature articles, Prashant Kamat for the citation analyses (from the ISI database), Mary Yess for her support and perceptive comments (as always), and of course the feature article authors for providing their reflections on the pioneering original works. Given the celebratory nature of this issue, we also feature the National Medal awardees who are members of this Society and their accomplishments.

Finally, *change* is the buzzword not only in the U.S. capital but in the masthead page as well. I am very happy to announce that Donald Pile is the new Contributing Editor in charge of the popular Tech Highlights column. After many years of stellar work, Mike Kelly is stepping down from this role but we are happy to note that he will continue to be actively involved with this column and the Society in general. Stay tuned.

Raj K.
Krishnan Rajeshwar
Editor

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