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ABSTRACT

Greg P. Smestad has served as an editor for Solar Energy Materials and Solar Cells since its inception in 1990 through August 2016. This farewell editorial outlines the story of the journal from Dr. Smestad's perspective and his role in its early development. It also shares his insights for the journal's future development and introduces new editors.

I have served as an editor for Solar Energy Materials and Solar Cells from 1990 through August 2016. After more than 26 years, I have stepped aside as editor, but have left the journal in very capable hands. I will remain as an emeritus editor to assist in an advisory capacity with special issues and to solicit high-quality contributions on emerging and underrepresented areas of materials science for solar energy conversion and utilization. My prior role as a topical, or subject, editor handling the peer-review of submitted manuscripts has been split into two, with Professor Ignacio Rey-Stolle of the Solar Energy Institute of the Technical University of Madrid and Dr. Simon P. Philipps of the Fraunhofer Institute for Solar Energy Systems ISE taking on my former tasks as of December 2016. The subject areas remain, and include concentrator solar cells, Concentrator Photovoltaics (CPV), emerging III-V concepts, multi-junction III-V solar cells and economics directly related to solar energy materials (e.g., PV recycling).

1. The story of the journal

The beginning of my association with the journal as an editor started in 1990 at which time the journal was simply called Solar Energy Materials. I assisted with the assembly of, and peer review for, a special issue on solar concentrators. I also contributed a paper to that special issue [1,2]. This lead to the offer from the Editor-in-Chief, Carl Lampert, to have me serve on the editorial board for the journal. At the time, he was one of three editors, having taken over the position from the journal's founding editor, Prof. Bernard Seraphin. In January 1992 (volume 25), the journal Solar Energy Materials [3] merged with another Elsevier journal, Solar Cells [4], becoming Solar Energy Materials and Solar Cells, and I assumed responsibilities for most of the manuscripts originating in Europe. I also contributed a paper derived from my thesis work to the inaugural issue [5,6]. At the time, I was located at the Hahn Meitner Institute in Berlin, Germany (now the Helmholtz-Zentrum Berlin). I shared the associate editor role with K. L. Chopra, Indian Institute of Technology, India and Yoshihiro Hamakawa of Osaka University in Japan.

Some of my early accomplishments were to encourage authors from around the world to submit manuscripts to what was then an emerging set of interconnected interdisciplinary fields. I served as European editor while I was in Europe doing my PhD thesis. I later served as one of the two geographic, or area, editors for the United States upon my return there. We then divided the editorial tasks based on subject areas and topics. I was given the topic of dye sensitized and photoelectrochemical solar cells, since I had made a contribution to the journal relating those topics to the teaching of solar energy conversion [7]. We later transferred these subject areas to Frederick Krebs shortly after he joined the journal as an expert in Organic Photovoltaics (OPV). Fostering a topic that I viewed as neglected in the journal, I then encouraged manuscripts in the area of silicon PV, realizing that most of the work in the Si PV manufacturing sector was still relevant and active. Having built this into a respected area for the journal, we brought on Dr. Ivan Gordon of IMEC in Belgium to cover all areas of silicon technology, from feedstock to thin layers, cells and modules. I then covered III-V and solar concentrator materials, both multi-junction devices and emerging technologies. Dr. Gordon has shepherded the publication of many special issues of the journal on silicon PV technologies and is now serving as our Editor-in-Chief.

One of the highlights of my work with the journal was to work with Frederick Krebs on the first editorial describing our journal's standards, as well as the expectations for solar conversion efficiency measurements. For that, we solicited the advice of measurement expert Keith Emery of the National Renewable Energy Lab (NREL) and his collaborators throughout the world. The resulting editorial was later expanded and updated to the 2015 version [8]. These *editors' requirements editorials* are the result of a group effort amongst our editors, the most current version of which can be found on our Guide for Authors web page [9]. Dr. Krebs (then of the Danmarks Tekniske Universitet, DTU, in Roskilde, Denmark) and I had many years of productive phone conversations discussing the developments in the field of solar energy and the development and improvement of the journal that supports it. For instance, it was he who recommended the appointment of Ivan Gordon as an editor.

I had the chance to work with many editors and authors, including

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and most notably, Dr. Claes-Göran Granqvist, a respected scientist in the field of electrochromics and the optical and electrical properties of materials for solar energy conversion. When he retired from his primary role as an editor, this was passed to the capable hands of Dr. Aline Rougier of the Institut de Chimie de la Matière Condensée de Bordeaux, CNRS. He and Dr. Nilgun M. Özer (now a retired Dean of San Francisco State University) were always our primary contacts for sol gel and electrochromic materials and devices. Dr. Xavier Mathew, of the Universidad Nacional Autónoma de México (UNAM) in Temixco, Mexico, and I met at a conference in Cancun in 2003, and I recommended that he join the journal as a topical editor covering non-silicon thin film solar cells. His specialty is CdTe devices, but he is just as comfortable discussing and advancing $CuInGaSe_2$ and any other thin film solar cell that you can imagine. I was fortunate to have him visit me in California on several occasions. Aryasomayajula Subrahmanyam (or Manu as he prefers to be called) of the Indian Institute of Technology in Chennai, India also had the chance to come for a visit. His proximity to the editorial offices of Elsevier in India make him our ambassador to our team members there, and he is a renaissance man in all forms of thin film deposition for solar devices of all types. He handles manuscripts on these topics with a special emphasis on oxide materials and devices.

I also had the honor of serving with the other members of our editor's advisory board whom we rely on for high-quality reviews, as well as to make suggestions for colleagues who can serve as peer reviewers. One of these included my mentor and friend Ahmed Ennaoui, who was with me at the HMI, but is now at the Institute for Research in Solar Energy and New Energies (IRESEN) in Morocco. He and many other members of our board routinely contribute special issues from conferences throughout the world. In addition, the suggestions and feedback of diligent reviewers and contributors such as Otwin Breitenstein of the Max Planck Institute exemplify the spirit that the journal belongs to the community that works together to improve it.

One of the many special tasks that I took on was to facilitate the technical transition from the handling of manuscripts via paper and mail to the Elsevier Editorial System (or EES). Working with Carl Lampert and the other editors, I helped to develop on-line form letters to communicate with authors and reviewers, and spearheaded a discipline and topic-specific classification system that we later modified and expanded for the new manuscript handling platform called EVISE.

2. New Editors

The editors who replace me have backgrounds that are diverse and complementary. Ignacio Rey-Stolle has been a Professor at the Solar Energy Institute of the Technical University of Madrid, Spain since 2003. He received his Ph.D. from the Technical University of Madrid, working on high concentrator GaAs solar cells. From the awarding of his Ph.D. onwards, Prof. Rey-Stolle has accumulated more than 18 years working in the field of photovoltaic solar energy conversion. In particular, his research efforts are focused on III-V multijunction solar cells produced via MOVPE growth, as well as associated device design, simulation, fabrication, characterization and reliability studies. This work has resulted in several world-record efficiency solar cell devices produced by his group. He has co-authored more than 75 scientific papers, four book chapters, has co-edited the Handbook of Concentrator Photovoltaic Technology, holds two patents and has given numerous talks at research institutes and photovoltaics conferences worldwide. He has been the principal investigator of eleven national and international research projects, has participated as an associate researcher in more than twenty projects, and has coordinated three technology transfer projects from the lab to the photovoltaic industry. He teaches Electronics and Photovoltaic Solar Energy at the Technical University of Madrid, where he also supervises and mentors graduate student research. From 2011 to 2016, Prof. Rey-Stolle also served as the director of the Master of Science program on Photovoltaic Solar Energy Conversion at the university.

Simon P. Philipps holds a diploma and Ph.D. degree in Physics, as well as a diploma degree in Business Administration. He joined the Fraunhofer Institute for Solar Energy Systems ISE in 2005 through his work on the numerical modeling of fuel cells and then on III–V multijunction solar cells. Since 2010, he is a project leader and is responsible for EU research funding and related networks and associations. He is Joint Programme Coordinator – together with Ivan Gordon – of the Joint Programme on Photovoltaic Solar Energy within the European Energy Research Alliance (EERA) and is member of the steering committee of the European Technology & Innovation Platform PV. In addition, he supports the directors of Fraunhofer ISE with respect to the institutes' research strategy. Since 2015, Dr. Philipps is also Managing Director of the Fraunhofer Energy Alliance and represents the activities in Energy Research of 19 member institutes. His specialties include analysis of technologies, markets and strategies for photovoltaics, in particular III-V solar cells, CPV systems and novel concepts. He has been a contributing author for chapters on these topics within several books, and has published many fundamental studies in peer-reviewed journals and at conferences. Educated in both science and business, his expertise also encompasses economics and business administration, including business model design and innovation management.

Dr. Philipps will be the area editor for III-V Multi-junction Solar Cells, CPV and Economics of Solar Materials and Prof. Rey-Stolle will be the area editor for Space Photovoltaics and Emerging PV Concepts. Some of the topics handled by Dr. Rey-Stolle overlap, and are synergistic, with those covered by Dr. Philipps, so the two editors work closely together.

3. Publishers stand out

There were many notable publishers who served as our primary contact at Elsevier during my time with the journal, but a few made lasting impressions and significant contributions. In my early days with the journal in the 1990s, Bas van der Hoek was the publisher at Elsevier and was quite supportive of ideas for improving the journal. I visited him at the company's offices in Amsterdam and can still hear him saying in his perfect English, but with a wry smile and a classic Dutch wit, "That Greg, he keeps us on our toes!". Clare Lehane served as an Executive Publisher for Elsevier (Energy & Nuclear) from 2011 to 2016. She made notable contributions to SOLMAT during 2011–2013, including bringing Dr. Aline Rougier on board as an editor in December 2011. I had the chance to help Ms. Lehane bring into being an improved journal homepage. Fernanda Ogochi served as senior publisher for SOLMAT from 2014 to 2018 and put into place the current structure for SOLMAT's editors (i.e., the new Editor-in-Chief), helping Carl Lampert and me to more smoothly transfer our roles to those responsible. She also drove gender balance in our journal, appointing more female researchers to the editorial board to acknowledge their contributions to the field and to serve as role models. I was able to suggest one such colleague who was appointed the board, and made suggestions that led to the selection of at least one other.

4. Insights for the future

This leads me to share some insights for the readers, editors, reviewers and authors of Solar Energy Materials and Solar Cells. First of all, why should one become an editor, or member of the editorial board, and why should one expend time each week to process the stream of manuscripts that are submitted? I can only say that for me, it was a way to positively impact the field in which I was educated and that I chose as my career. Being an editor is a great responsibility, one that comes with a significant amount of power and potential impact. That said, it is necessary to remind oneself to wield that power not to benefit oneself, but for the common good. Science is one process by which we human beings can separate reality from fantasy, fact from fiction. At the core of

that process is the submission of ideas to our peers and the review of that material in a constructive and mutually-beneficial way. This is the process of *peer review*, and it is the responsibility of the editors, reviewers and authors alike to uphold and nurture that time-honored process.

So, if you can, volunteer to be a guest editor for a special issue to this journal, or another journal. After all, that is what started my career as an editor. You might not go down the path I chose, but it would provide useful insights on the scientific method and about the publication process. If you are a reviewer, or would like to be a reviewer, contact the editors or members of the editorial board. When you are asked to review a paper, consider it an honor and a privilege, and dedicate enough time to provide detailed and useful comments, those that you would want to receive and in a tone and style that you would want to read. Provide enough detail for the editors to make an informed decision, and for the authors to use to improve upon their work.

To authors and fellow scientists wishing to publish in the journal, I can say that your best resource is the Guide for Authors found on the journal's website [9], as well as the most recent version of the journal's *editors' requirements* editorial. These describe reporting standards and best practices. Follow the instructions to the best of your ability, but also realize that the peer review process is a social endeavor and is a partnership between authors, reviewers and the handling editor. Together, they form a community. Be patient, but feel free to send questions or concerns to the editor. What you do can, and will, make a difference.

I recently had the honor of attending the annual SOLMAT editors meeting this year in Amsterdam. Most of the editors were in attendance, and a variety of journal-related business was discussed. One of the outcomes was the recognition that the peer review and editorial processes are human endeavors fraught with both the promise and the pitfalls of human interactions. Going back to the hotel, I walked between my successors, Simon Philipps and Ignacio Rey-Stolle. Dr. Philipps discussed the human aspects of the editorial process by stressing that the letters sent to the authors and reviewers should be personalized, and that this could set the journal apart as one that cares both about science and the humanity of those involved. He recounted how when he was a new graduate publishing some of his first articles in the journal that the editor handling his manuscript had added a note to the review complementing him on the 3-D graphics and the level of detail found in his manuscript [10]. He then told me that this editor was me. More than 26 years folded into a single instant that illustrates the difference an editor and scientist can make. I have sought to handle each and every manuscript with the same realization that there are people behind the words and graphs. It is my hope that this tradition will carry-on in the journal and that it will continue to fold together the best aspects of science and its pursuit.

5. Conclusions

I would like to thank Dr. Carl Lampert and Elsevier for the opportunity to be a part of this essential aspect of science and technical advancement. For over a quarter of a century, it has been an honor and a pleasure to help facilitate the growth and development of this highly recognized journal. Like the field of solar energy itself, there is still much to be done, and I can predict that the journal Solar Energy Materials and Solar Cells will continue to play a significant role in the deployment of all forms of solar energy converters. The journal will continue to be a partnership between its publisher (Elsevier), the authors, the reviewers and the editors. This cooperation and collaboration, together with peer review, is the foundation of the scientific method that allows for the continued advancements in our discipline and our field.

Greg P. Smestad and his pyrheliometer.

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