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Editorial

Priority publishing in Solar Energy Materials and Solar Cells

1. Specific topics

Renewed interest in solar energy conversion has been inspired by concerns regarding carbon dioxide pollution, job creation, and market instabilities due to the geopolitics and widespread consumption of fossil fuels. This interest is likely to be self-sustaining due to larger economies of scale, new materials and processes, and a fundamental understanding of the basic properties required for solar energy converters that are both economical and efficient [1–3]. Consequently, there has been a rapid upsurge in the number of solar-related submissions to this journal and many other journals as well. The purpose of this editorial is to outline the methods by which submissions should be made to *Solar Energy Materials and Solar Cells*, and to clarify those research directions that the editors feel need special attention. Papers that are focused on these aspects will normally be given high priority and thus have a greater chance of progressing more rapidly through the peer review process.

Although the name *Solar Energy Materials and Solar Cells* might be misconstrued as an emphasis on solar cells, it should be pointed out that the journal has a wide scope and breadth and generally considers works on all solar energy materials, energy efficient films and devices made from these materials. The journal encourages all innovative approaches in materials science and engineering as it applies to the field of solar energy, especially those approaches that use analytical tools applied towards an understanding of underlying chemistry, physics, and interface properties. Papers on new materials for both active and passive layers are considered. Priority will be given to reports on complete materials science studies with emphasis on optoelectronic or thermal properties of solar converters. The editors encourage manuscripts reporting on: fundamental experimental research on new materials or device structures, effective encapsulation and packaging schemes for devices, production methods that can lead to high volume manufacturing, process parameters that contribute to material quality and device performance and new strategies for improving performance past that of state-of-the-art devices. Special priority is often given to works that report on an understanding of degradation or stability and those that present stability data, since these often lead to outdoor testing and deployment of the technology.

The on-line Elsevier Editorial System (EES) should be used to submit manuscripts based on those topics associated with one of our editors. The authors should select the Associate Editor whose topic area overlaps with the focus of the manuscript. Each editor will handle letters and rapid communications within that editor's topical areas. When submitting manuscripts via the EES, a summarized list of topics for each editor is available. Authors can refer to this editorial for a more detailed list of topics.

Dr. Greg P. Smestad manages the peer review process for manuscripts on wafer-based crystalline and multicrystalline silicon solar cells [4], including back contact cells. Analytical tools such as impurity analysis and luminescence measurements for R&D and manufacturing are of special interest, as well as photovoltaic device/module/system testing. Supply chain and materials availability issues are of particular concern as the solar industry matures [5–8]. Therefore, manuscripts on purification and processing methods for polysilicon will be considered, especially if they include the results for devices made with those materials. Dr. Smestad will also cover concentrator photovoltaic (CPV) cells and systems, as well as III/V materials and solar concentrators of all types. Manuscripts on thermophotovoltaic, thermoelectric and thermionic materials and devices are also processed by Dr. Smestad.

Professor Frederik C. Krebs covers organic photovoltaic (OPV) [9], polymer solar cells, and dye-sensitized cells. Such reports are evaluated on the basis of whether they contribute to an improved understanding of the field in terms of physics, chemistry, and engineering. Articles reporting novel organic materials with a low performance are considered, provided that they provide insight into other important areas, e.g., stability or manufacturing. Dye-sensitized solar cell reports will be considered for publication only if they present stability data, an understanding of degradation mechanisms, or energy conversion efficiencies greater than 5% [10].

Professor Krebs also covers the topic of polymer materials for encapsulation and packaging of all types of solar conversion devices including ethylene-vinyl acetate (EVA), polyvinyl butyral (PVB), silicones, and other transparent polymers. Solar photocatalysis reports are also considered. Reports on photodegradation of organic substances over a photocatalytic surface are considered only if they provide in-depth understanding of the mechanisms or demonstrate usefulness in an application. Reports on catalysts for water splitting or photochemical conversion over a catalytic surface, or via catalysts, are particularly encouraged.

Professor Claes G. Granqvist covers basic optical and electrical properties of solar energy materials, as well as transparent conductive oxides (TCOs) [3,11,12]. Most of our editors cover some sort of solar cell device, while Dr. Claes Granqvist covers basic properties related to materials for solar thermal collectors and low-emittance surfaces, phase-change materials for thermal storage, absorber or reflector materials used for concentrating solar power (CSP), materials and devices for radiative cooling, transparent conductors, transparent, translucent, and scattering

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materials related to solar energy and radiative (sky) cooling, chromogenic materials and devices (especially electrochromics and thermochromics), and materials for "green buildings".

The Editor-in-Chief, Dr. Carl M. Lampert, manages the technical aspects of the journal, deals with cases of plagiarism and approves special issues together with the publisher. The technical topics that Dr. Lampert covers include: chromogenic materials of all types, light control films, selective absorbers, and reflectors for solar thermal and energy efficiency applications. Since these topics overlap with some of those for Dr. Granqvist, authors can choose either editor. In photovoltaics, Dr. Lampert covers some third generation PV devices and building-integrated PV (BIPV). Finally, Dr. Lampert covers all other materials, topics, and concepts not covered by the other editors.

Dr. Ivan Gordon covers manuscripts on silicon-based thin film solar cells. This includes Heterojunction with Intrinsic Thin layer (HIT) cells and devices that utilize a thin layer of deposited silicon. Thin-film silicon solar cell reports are evaluated on the basis of whether they contribute to the general understanding of the field in terms of physics, engineering, and material properties. Of particular interest are the rates of deposition and the structure, orientation, crystallinity, and quality of the silicon film produced. As is the case generally, process parameters and the resulting device performance are a priority and a primary concern.

Professor Kasturi Chopra covers manuscripts that include thin film solar cells of all types, as well as TCOs, selective thermal absorbers and low-emittance layers. An emphasis is preferred on the physics and chemistry of novel and viable device materials, new theoretical aspects of these devices, and system integration and applications of these materials. Also, Dr. Chopra covers certain special issues of *Solar Energy Materials and Solar Cells* with reports from regional conferences on the Asian subcontinent.

Dr. Xavier Mathew is the editor for all non-silicon thin film solar cells (e.g., CdTe and $CuInGaSe_2$ or CIGS type solar cells) [1,2,13]. Papers on CdTe, CIGS and related devices will be considered if they report on one or more of the following: carrier transport, strategies to overcome the efficiency-limiting barriers, processing steps that lead to better material quality, grain boundary control and overall device performance, processing steps in the device's fabrication, low cost technologies, and novel concepts in large area deposition of thin film materials. Papers reporting routine material processing, characterizations and low efficiencies will not be encouraged unless the scope of the paper is to demonstrate a new or low-cost approach. Reports stating efficiencies comparable with the existing records must be confirmed in a certified laboratory [10,14,15]. Papers dealing with the purification, recycling, and reuse [7,8] of thin film PV materials are encouraged. Dr. Mathew will also cover new thin film solar cell materials and non-silicon tandem thin film PV devices. Dr. Mathew also oversees special issues of the journal on solar-related conferences in Latin America.

2. Common pitfalls

Due to the large number of manuscripts the journal receives each day, only the few manuscripts that meet our rigorous standards will be accepted. Therefore, tough choices must be made about the papers that we send to our reviewers. The current rejection rate is approximately 60%. To keep authors from falling victim to one or more of several common mistakes, we describe some of them below. Frequently, references are not up to date or the work does not significantly add to the existing knowledge of the field. In some cases, the work reported in the paper is not fully developed and further research is needed before consideration for publication. Higher priority is given to submitted manuscripts that relate the material's properties directly to devices made with the material described in the paper. Results and discussion sections must strongly relate to the materials science aspects of solar energy conversion. Articles simply reporting on novel materials or materials grown by novel methods are acceptable only if they present proof (e.g., a theoretical assessment or experimental data) that allows confirmation of whether the material can be considered a candidate for a solar control device or a solar converter. Articles showing only general materials characterization results should therefore be submitted elsewhere. Articles of a purely theoretical nature and modeling studies are generally not acceptable unless experimental data, either obtained by the authors or taken from literature, is presented that clearly confirms the calculations presented.

A prior editorial described guidelines for reporting solar cell conversion efficiencies in the journal [10]. This policy is still in effect and is subject to the discretion of the handling editor to administer it when considering each submission. It should be stressed that the most relevant spectrum to utilize for solar-related measurements is described in ASTM G173-03 and IEC 60904-3 edition 2. Tables are freely available for the extraterrestrial spectrum, terrestrial direct normal plus circumsolar and terrestrial global 37° south-facing tilt values [16]. If the spectral irradiance values of the latter are integrated with the modified or composite trapezoidal rule, the global and direct irradiances are 1000.37 and 900.14 W/m^2, respectively. In addition, 25 °C is the internationally recognized reference temperature for solar cell measurements. Given the temperature coefficients of some PV technologies, deviations from this value can lead to significant errors.

Several references are available that include a collection of citations on solar cell measurement standards and techniques [1,14,15]. Quantum efficiency (EQE) measurements can be integrated with the AM1.5 spectral solar flux and the result compared to the measured short circuit current density (J_{SC}) values. The y-axis of the EQE plot can be calibrated when the data is scaled by a common factor so that measured and calculated J_{SC} values are in agreement. If the necessary EQE values exceed 100%, then reasons for this must be sought. One recommendation is to utilize a reference cell combined with a suitable filter such that the spectral responsivity is similar to the device under test. Another practice to ensure accuracy and relevance is to confirm short circuit current density measurements using a mask or aperture over the cell and to double check indoor measurements with those taken outside.

If the work has multiple English mistakes, or requires English polishing, it is the author's responsibility to fix them before submission of the manuscript. The article may be on the "cutting edge" of science, but it will not receive the recognition that it deserves unless the author's meaning can be understood. An article needs to be in its best possible form when it is submitted for publication, which includes spelling, grammar and style corrections, as well as factual, accurate data. Authors can fine-tune their grammar by working with a native speaker, an expert in English or by using one of several English-polishing services that are available (e.g., http://www.elsevier.com/wps/find/authorsview.authors/languagepolishing). In addition, references in the journal *Solar Energy Materials and Solar Cells* should include the titles of the works. For details on these requirements, please refer to our on-line Guide for Authors, or the first issue for the current year.

3. Managing your account on EES

There has been a continual improvement in the on-line editorial system (EES) and both reviewers and authors are encouraged to add "@elsevier.com" to their address books, or

safe senders list, to ensure delivery of our e-mail to their inbox. If this is not done, some e-mails regarding journal business may end up in spam or junk folders. It is also important to update your profile on EES (http://ees.elsevier.com/solmat) so that we can match your areas of interest to the processing of manuscripts for publication. This is accomplished by the following steps:

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4. Conference proceedings and special issues

Special issues of *Solar Energy Materials and Solar Cells* will include a collection of high quality papers about a particular topic or from a symposium or conference. The journal is keen to show support for international conferences on topics of interest to our readers. Papers will be selected strictly according to the editorial policies described herein, and will follow the same peer review process as is applied to a regular paper.

Presenters at solar conferences are encouraged to submit papers as regular submissions to our journal. Manuscripts should have the length required to present the work well, should meet all the requirements found in our Guide for Authors and should keep in mind all of the aspects of this editorial. The organizers of the conference can choose 8–20 of most relevant or best quality papers from their conference and submit these to the journal. A single editor processes these manuscripts, and guest editors may be utilized in the review process. In some cases, the journal editors will select from a list of titles and abstracts at the conference and will invite authors to submit a paper. Editors can then produce a special issue with those papers that have made it through peer review, and the conference or special issue organizer can write an introduction to the issue. No submitted paper is guaranteed publication prior to peer review and editor approval.

5. Peer review tools

Peer review is the process of subjecting an idea, work, or research plan to the scrutiny of others who are among a community of experts in the same or similar field. The review process is an often-neglected part of the scientific method. Performing a meaningful and impartial review is a pillar of science and is aimed at achieving high quality R&D in a minimum amount of time [17,18]. Elsevier and the journal *Solar Energy Materials and Solar Cells* appreciates these facts and values our reviewers' time and efforts in reviewing papers. To assist in the reviewing process, Elsevier offers reviewers full access to Scopus for 30 days. Scopus (www.scopus.com) is the world's largest abstract and citation database of research information and quality internet sources. With Scopus one can search for related articles, references, and papers by the same author. Reviewers may also use Scopus for their own purposes at any time during the 30-day period. If they already use Scopus at their company or institute, having this 30-day full access means that they will also be able to access Scopus from home or during travel. Reviewers may rapidly and efficiently submit comments online via the EES. After login, they can find spaces for confidential comments to the editor, comments for the author and a simple report form to be completed. More details and resources on peer review can be found at the dedicated area of the Elsevier web site (http://www.elsevier.com/wps/find/intro.cws_home/peer) or at the reviewers' home page (http://www.elsevier.com/wps/find/reviewershome.reviewers). To be registered as a reviewer, those who are interested can contact one of the editors. Likewise, authors can find a dedicated on-line resource center (http://www.elsevier.com/wps/find/authorsview.authors).

This editorial updates two prior editorials [10,19] and clarifies several important aspects of peer review for our journal. Keeping all of the above information, factors and aspects in mind will hopefully allow for a smoother, more rapid, and efficient flow of manuscripts. This will better serve the *Solar Energy Materials and Solar Cells* community so that we can continue to assist our authors to become strong contributors to this exciting field.

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