Twenty years of the *Journal of Solid State Electrochemistry*

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It is now 20 years since the first edition of our Journal appeared, in July 1997. This is an appropriate moment to look back on its foundation and to look forward to the future. The motivating idea all those years ago was that electrochemistry in condensed matter was emerging as the focus of several new fields of research, particularly energy technologies and nanotechnologies, and that a forum for the dissemination and exchange of new ideas was urgently needed. The *Journal of Solid State Electrochemistry* was the result. The continuing success of the journal has fully justified those original thoughts.

The founding members of the Editorial Board realized that “solid state electrochemistry” was poised for a rapid evolution and would soon diversify away from its historical base in solid state ionics. This soon came to pass. Thus, whenever the structure of a condensed phase was found to be responsible for novel electrochemistry, whether it is crystalline, liquid crystalline, or amorphous, the Board members agreed that it was a topic fitting for our journal. In this spirit, a new field of electrochemistry was born. The pioneering members of the Editorial Board and Regional Editors were A. J. Bard, V. Z. Barzukov, F. G. K. Baucke, J. O. Besenhard, J. O’M. Bockris, A. M. Bond, K. Z. Brainina, U. Guth, N. Hackerman, A. Hamnett, K. Itaya, P. J. Kulesza, M. Lovrić, M. Lyons, H. B. Mark Jr., H.-H. Möbius, K. B. Oldham, P. Sanchez-Batanero, R. Schoellhorn, G. V. Subba Rao, D. E. Tallman, J.-M. Tarascon, I. Uchida, V.

Vigdergauz, A. K. Vijh, and N. F. Zakharchuk. I thank them all for their extraordinary efforts.

The 20th anniversary of the founding of our Journal is also an appropriate moment to mourn the passing of colleagues who have died during the intervening years: F. G. K. Baucke, J. O. Besenhard, J. O’M. Bockris, N. Hackerman, H. B. Mark Jr., and H.-H. Möbius. They all shaped the journal with their unique personalities, besides contributing scientific input at the very highest level.

Since 1999, Dr. Michael Hermes has helped me to manage the torrent of submissions, and since 2006, he served as Managing Editor. Everyone connected with the journal owes him a debt of thanks for the rigorous scrutiny and continuous enthusiasm with which he checks all the submitted manuscripts before they are distributed to editors. Without this crucial work, we could not run the journal!

The success of a scientific journal may be judged by many different criteria: the most important, in my eyes, is the quality of its authors. In particular, if world leading experts choose to submit their own work to the journal, then we have achieved our goal. I am pleased to confirm that the journal today attracts a very talented authorship. Space is limited, and competition to fill it is high. For example, more than 1000 manuscripts were submitted during the last calendar year, and only the top third were accepted for publication. Bearing in mind that we get practically no “junk manuscripts,” this is a good indicator of quality. Another important criterion is the *Impact Factor*. From the foundation of the journal until today, this has more than doubled, from 1.1 to 2.3. This strongly indicates that the readership of the Journal is absorbing (and citing) the science provided.

The journal began life under the auspices of Peter Enders at the Springer office in Heidelberg. Later, Dr. Steffen Pauly continued this work, and now Dr. Svetlana Zakharchenko is my partner on the publisher’s side. It is my sincere pleasure to thank them all. I am also grateful to many other Springer staff

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Table 1 The most frequently cited paper of each year in the years 1997 to 2016. If the most frequently cited paper was a review, the most frequently cited original paper is also given

Year	Title	Authors	Type of publication	Number of citations	Reference
1997	A model for the propagation of a redox reaction through microcrystals	M. Lovrić, F. Scholz	Original paper	106	[1]
1998	Electrocatalytic oxidation of hydrazine at cobalt hexacyanoferrate-modified glassy carbon, Pt and Au electrode	S. M. Golabi, F. Noor-Mohammadi	Original paper	97	[2]
1999	Research on the electrochemistry of oxygen ion conductors in the former Soviet Union. II. Perovskite-related oxides	Vladislav V. Kharton, Aleksey A. Yaremchenko, Evgeny N. Naumovich	Review	220	[3]
2000	AC impedance and state-of-charge analysis of a sealed lithium-ion rechargeable battery	Shalini Rodrigues, N. Munichandraiah, A. K. Shukla	Original paper	93	[4]
	Modeling of solid state voltammetry of immobilized microcrystals assuming an initiation of the electrochemical reaction at a three-phase junction	Uwe Schröder, Keith B. Oldham, Jan C. Myland, Peter J. Mahon, Fritz Scholz	Original paper	100	[5]
	Electrochemical behavior of metal hydrides	J. Kleperis, G. Wójcik, A. Czerwinski, J. Skowronski, M. Kopczyk, M. Beltowska-Brzezinska	Review	203	[6]
2002	Electroactive conducting polymers for corrosion control	Dennis E. Tallman, Geoff Spinks, Anton Dominis, Gordon G. Wallace	Review	361	[7]
	Nickel pentacyanonitrosylferrate film modified aluminum electrode for electrocatalytic oxidation of hydrazine	H. Razmi-Nerbin, M. Pournaghi-Azar	Original paper	61	[8]
2003	Double-layer and pseudocapacitance types of electrochemical capacitors and their applications to the development of hybrid devices	B. E. Conway, W. G. Pell	Original paper	197	[9]
2004	Electrochemical and structural study of LiCoPO ₄ -based electrodes	Natalia N. Bramnik, Kirill G. Bramnik, Thorsten Buhrmester, Carsten Baecht, Helmut Ehrenberg, Hartmut Fuess	Original paper	103	[10]
2005	Voltammetry at spatially heterogeneous electrodes	Trevor J. Davies, Craig E. Banks, Richard G. Compton	Review	154	[11]
2006	The effect of the polyaniline morphology on the performance of polyaniline supercapacitors	Haihui Zhou, Hong Chen, Shenglian Luo, Gewu Lu, Wanzhi Wie, Yafei Kuang	Original paper	76	[12]
	Stress generation and fracture in lithium insertion materials	John Christensen, John Newman	Original paper	261	[13]
2007	Synthesis and characterization of mesoporous nickel oxide for electrochemical capacitor	Mao-Wen Xu, Shu-Juan Bao, Hu-Lin Li	Original paper	79	[14]
2008	Electrode materials and reaction mechanisms in solid oxide fuel cells: a brief review. II. Electrochemical behavior vs. materials science aspects	Ekaterina V. Tsipis, Vladislav V. Kharton	Review	222	[15]
2009	The influence of edge-plane defects and oxygen-containing surface groups on the voltammetry of acid-treated, annealed and “super-annealed” multiwalled carbon nanotubes	Andrew F. Holloway, Gregory G. Wildgoose, Richard G. Compton, Lidong Shao, Malcolm L. H. Green	Original paper	76	[16]
	Quality control criteria for solid-contact, solvent polymeric membrane ion-selective electrodes	Ernő Lindner, Róbert E. Gyurcsányi	Review	125	[17]
	A facile approach to the preparation of loose-packed Ni(OH) ₂ nanoflake materials for electrochemical capacitors	Jun-Wei Lang, Ling-Bin Kong, Wei-Jin Wu, Min Liu, Yong-Chun Luo, Long Kang	Original paper	96	[18]
2010	Cathode materials for solid oxide fuel cells: a review	Chunwen Sun, Rob Hui, Justin Roller	Review	385	[19]

Table 1 (continued)

Year	Title	Authors	Type of publication	Number of citations	Reference
2011	Asymmetric supercapacitors based on stabilized α -Ni(OH) ₂ and activated carbon	Jun-Wei Lang, Ling-Bin Kong, Min Liu, Yong-Chun Luo, Long Kang	Original paper	109	[20]
	Separator technologies for lithium-ion batteries	Xiaosong Huang	Review	150	[21]
	Inhibition effect of environmentally benign Karanj (<i>Pongamia pinnata</i>) seed extract on corrosion of mild steel in hydrochloric acid solution	Ambrish Singh, Ishiaque Ahmadi, V. K. Singh, Mumtaz Ahamed Quraishi	Original paper	73	[22]
2012	Rechargeable batteries: challenges old and new	John B. Goodenough	Review	101	[23]
2013	Energetics and kinetics of light-driven oxygen evolution at semiconductor electrodes: the example of hematite	Laurence M. Peter	Feature article	54	[24]
2014	Attractive forces in microporous carbon electrodes for capacitive deionization	P. M. Biesheuvel, S. Porada, M. Levi, M. Z. Bazant	Original paper	58	[25]
2015	Mesoporous activated carbon spheres derived from resorcinol-formaldehyde resin with high performance for supercapacitors	Yiliang Wang, Binbin Chang, Daxiang Guan, Xiaoping Dong	Original paper	19	[26]
2016	Fabrication, characterization and photoelectrochemical performance of chromium-sensitized titania nanotubes as efficient photoanodes for solar water splitting	Mohamad Mohsen Momeni, Yousef Ghayeb	Original paper	19	[27]

involved in the publishing process, which is nowadays a very diverse and globalized business, requiring constant attention and experienced stewardship.

A particular highlight of the last 20 years was the special issue “Electrochemistry—Past, Present and Future” (No. 7–8, 2011) published to celebrate the International Year of Chemistry in 2011. This issue is actually a book with 548 pages, containing reviews written by world experts. I am forever being congratulated on its publication and asked if it might be re-published in the form of a monograph. Although I understand this request, the online electronic access to the material ensures that everybody can download these reviews at any time.

Dr. Svetlana Zakharchenko has kindly analyzed the publications of the last 20 years with respect to the number of citations they have got. The results are given in Table 1, where the most frequently cited papers of each year in the years 1997 to 2016 are listed. If the most frequently cited paper is a review, the most frequently cited original paper is also given. Sincere thanks go to these authors, and of course to all other authors who cannot be listed here.

No journal can be published without an armada of dedicated reviewers: they perform the key step in the publication process. The quality control of the journal is in their hands. Without them, the scientific literature would rapidly decay. In this regard, let me mention here the work of J. O’M. Bockris as a reviewer: his reports were masterpieces with respect to science, ethics, and far-sightedness. He was very severe where science and accuracy were concerned; yet, he never tried to force authors to reference his own papers, and he never asked for the rewriting of passages which he would have written differently. I well remember his remark “I would not have written it this way, but if the authors like to write it that way, let them do so” (not verbatim). This tolerance of the “handwriting of the author” is certainly a noble quality of a reviewer.

Now let us try to look into the future: one does not have to be a prophet to predict that electromobility, electric power sources, and storage devices will continue to be hot topics of international research and development. In any case, this trend is obvious in recent *Tables of Contents* of the journal and will, no doubt, continue into the future. I am pleased to report that the journal has not shifted completely to applied research but still maintains a healthy balance of papers on theoretical topics. The reviews published in this anniversary issue by Doron Aurbach et al. [28], Hiroki Nara et al. [29], Diana Golodnitsky [30], Tobias Placke [31], Ivo Hümmelgen [32], and George Inzelt [33] clearly point to current trends. Regular readers of the journal will also be aware that we are publishing papers in the field of electroanalysis. Progress in electroanalysis and electrochemical sensors is currently certainly slower than progress in power sources and storage devices, but some spectacular developments are occurring: the development of dating procedures for metals (see the

review of Antonio Domenèch-Carbó in this issue) provides an impressive example of the application of solid state electroanalysis. The field of conducting polymers, reviewed by George Inzelt in this issue, has high significance for almost all electrochemistry, batteries, fuel cells, supercapacitors, sensors, etc. It will remain a pillar of our publication scope. Theoretical electrochemistry (see e.g., steady-state electrolysis [34], voltammetry at three-phase junction [35], DOCC site concept [36], voltammetry at three-phase junction [5], corrosion current densities [37], non-Marcus model for electrostatic fluctuations in long-range electron transfer [38], electron transfer [39, 40], Tafel slopes [41], convolution [42], IL double layer [43], equivalent circuit for C-based supercapacitors [44], single molecule transistor [45], steady-state voltammetry [46], capillarity and electrocapillarity of solid interfaces [47], normally rather rare in all journals, is another topic which will continue to be cultivated in our journal. We will also continue to draw the attention of our readers to the history of electrochemistry, e.g., history of platinum single crystal electrochemistry [48], double layer effects in electrode kinetics [49], electrochemical phase formation [50], nonaqueous media in electrochemistry [51, 52], lithium batteries [53], free energy relationships [54], solid electrolyte fuel cells [55], glass electrode [56], electrochemical stripping techniques [57], electrode kinetics [58], osmotic theory [59], and theories of electrochemical double layer [60], ionic strength and electrode kinetics [61], Nernst equation [62], as we believe that this is a prerequisite for knowing where we have come from and where we have to go.

The future of the journal will depend on new and younger editors, who will certainly bring in fresh ideas and enthusiasm. Therefore, we are constantly appointing new members of the editorial board (Stephen Fletcher and José Zagal in 2011), and from time to time also new topical editors, when that is desirable (2009 Galina Tsirlina for theoretical electrochemistry, 2012 Antonio Domènech-Carbó for solid state electroanalysis and Palani Balaya for batteries, supercapacitors and fuel cells, 2016 Yair Ein-Eli for fuel cells, batteries and supercapacitors, and Henny Bouwmeester for solid state electrochemistry). In 2007, the decision was made to replace Regional Editors with Topical Editors, because this allowed a more focussed manuscript handling. This, too, has been a success.

Electrochemical technologies are essential for the future of mankind, and so the progress in electrochemical fundamentals and applied research will continue to be of interest. These same topics will also maintain a flourishing electrochemical literature, to which we will add our own share!

I have initiated the foundation of the journal and served as Editor-in-Chief from the first day onwards. As we enter the third decade of the journal, I look forward to the future with continued optimism.

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