

Chemistry, Journals, and Sustainability

Rarely has a concept gained prominence in scientific and everyday discourse as rapidly as sustainability. A decade ago the term was in customary use only among forest rangers, to whom it meant forest management, whereby one should not log more wood than can grow back. The chemical industry has long understood the importance of sustainable management of its resources and the exploration of alternative sources, and academic research has also seized the challenge presented by dwindling fossil fuels and raw materials. In Europe, these efforts are coordinated by the initiative SusChem (sustainable chemistry).

"Here is oil! Oil is here! Piston-lubricating oil is here and that which lights the towns". Thus wrote Bertolt Brecht in a lyric poem three-quarters of a century ago. And today oil remains the resource for energy and materials. Even if one considers that metals play a large role in materials,

their extraction and processing require a vast amount of energy. Sustainability in chemistry means the pursuit and utilization of resources other than oil. As an energy source, oil can be substituted by nuclear and solar energy, along with wind, tidal, and hydropower. In particular, the increased use of solar energy, which in many respects would be the most attractive energy source, still requires much research: photocatalysis, photovoltaics, photosynthesis, and the many further forms of "photo" research. The environmentally conscious use of coal must be stepped up; the safe generation, storage, and transport of hydrogen are problems which chemists must work on, not to mention the challenges of carbon dioxide chemistry. Using renewable resources as significant sources of energy and raw materials, but

without impairing food production in the process, is a further challenge. And the list can easily be extended! Some solutions to these issues are quickly branded as utopian, but we should not forget what was said of oil 200 years ago at the Russian Academy of Sciences in St. Petersburg: "Oil is a worthless excretion of the Earth—a sticky liquid that stinks and cannot possibly be put to use."^[1]

It is therefore not surprising that the Gesellschaft Deutscher Chemiker (German Chemical Society, GDCh) made this topic the central theme of the "Science Forum 2007" (Wissenschaftsforum 2007), the biannual conference from September 16 to 19 in Ulm, Germany. The aptly titled conference "Energy, Materials, and Synthesis" will feature plenary lectures on, for example, "Sustainable Energy Supply" (A. Voß) and "New Materials for the Efficient Use of Thermal Energy" (M. Jansen), and there will be symposia on "Chemistry and Materials for Tomorrow's Energy Supply" and "Energy and Material Flow in Civil Engineering". At the

commencement of the conference, the future of chemistry will no doubt also be addressed in the August Wilhelm von Hofmann Lecture, which will be held by George Whitesides on "Rethinking What Chemistry Does". Incidentally, an eminently readable essay that he wrote on the future of chemistry was published in *Angewandte Chemie* in 2004: "Assumptions: Taking Chemistry in New Directions".^[2] So, we'll see you in Ulm—there are still some places available!

The issue in which this editorial appears—in time for the Ulm conference—contains a Review on "Sustainable Concepts in Olefin Metathesis", which is a title that would not have existed a few years ago. The embodiment of sustainable chemistry is no doubt catalysis in all its varieties: heterogeneous and homogeneous catalysis, bio-, photo-, and electrocatalysis. In the first half of this year, nearly 20 % of the articles in *Angewandte Chemie* had the word catalysis (in all its variants) in their title! And Issue 38 will be devoted entirely to this topic. On the occasion

of the 150th anniversary of the company Süd-Chemie, the beginnings of which go back to none other than Justus von Liebig, *Angewandte Chemie* is publishing a special thematic issue on catalysis, as catalysts comprise the most important operational division of this venerable enterprise and represent the key to future developments in chemistry. The two Reviews in that issue are titled "Synergies between Bio- and Oil Refineries for the Production of Fuels from Biomass" (A. Corma et al.) and "Liquid-Phase Catalytic Proc-


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essing of Biomass-Derived Oxygenated Hydrocarbons to Fuels and Chemicals" (J. Dumesic et al.), and they describe research results that could not better represent sustainable chemistry.

Both Reviews could well have adorned the first issue of *ChemSusChem*, which is scheduled to appear at the beginning of 2008. The results of chemical research that are needed for sustainable energy and raw materials for humanity are published in many journals. *Angewandte Chemie* will naturally continue to concern itself with this theme, as it did, for example, at the beginning of the year with the article "The Future of Energy Supply: Challenges and Opportunities"^[3] and indeed as it does with many contributions in each issue. But every movement in research has required a vocal medium of its own to strengthen its inherent vitality. *ChemSusChem*—the name aims to evoke the European platform SusChem (see above)—publishes, as do the sister journals *ChemBioChem*, *ChemMedChem*, and *ChemPhysChem*, both short and long original articles along with reviews of every form and essays on all topics that address chemistry and sustainability with regard to raw materials and energy resources. The first contributions have already been received!

The concept "sustainability", as mentioned above, is used ubiquitously—why then not speak of "sustainable publishing"? *ChemSusChem* is an excellent case in point: Just as one should not cut down more trees than can grow back, one should also not create more new journals than old ones are discontinued, as no sector can realistically sustain too much of a good thing. This

principle could serve as an imperative for sustainable publishing. The Società Chimica Italiana (SCI) will discontinue the journal *Annali di Chimica*, which was founded in 1911 and more recently published by Wiley-VCH, at the end of this year to make room for *ChemSusChem*. The founding societies of the new journal will be the SCI and the GDCh, and as its sister journal, *ChemSusChem* will initially be published in collaboration with *Angewandte Chemie*. This method guarantees from the start excellent quality and a wide circulation, as all institutional subscribers to *Ange-*

tion, visit the journal homepage at: www.chemsuschem.org.

ChemSusChem is the newest member of the family of European chemistry journals which are published by the Editorial Union of Chemical Societies (EuChemSoc) and with which *Chemistry – An Asian Journal*, published by the Asian Chemical Editorial Society (ACES), became affiliated last year. 2007 marks the 10th volume of both the *European Journal of Inorganic Chemistry* and the *European Journal of Organic Chemistry*, and if one takes a

Table 1: Impact Factor (IF) and number of pages of the final volume of journals that preceded the European Journals (see Table 2).

	Final year	Last IF	Pages in last volume
<i>Chem. Ber.</i>	1996	1.774	1646
<i>Liebigs Ann.</i>	1996	1.303	2216
<i>Recl. Trav. Chim. Pays-Bas</i>	1996	1.511	548
<i>Bull. Soc. Chim. Fr.</i>	1997	0.786	1082
<i>Bull. Soc. Chim. Belg.</i>	1997	0.473	836
<i>Gazz. Chim. Ital.</i>	1997	0.891	850
<i>An. Quim.</i>	1998	0.312	370
<i>J. Chim. Phys. Phys.-Chim. Biol.</i>	1999	0.45	1634
<i>ACH – Models Chem.</i>	2000	0.571	880
<i>Farmaco</i>	2005	0.79	996
<i>Ann. Chim.</i>	2007	0.516	790 ^[a]

[a] For 2006.

wandte Chemie will also receive *ChemSusChem* for at least the first year. The new journal will be operated through the concerted efforts of the editorial staff, an International Advisory Board, and an Editorial Board, the latter of which is headed by Matthias Beller (Rostock, Germany), Gabriele Centi (Messina, Italy), and Daniel G. Nocera (Cambridge, USA). For more informa-

Table 2: Impact Factor (IF) and number of pages for 2006 of the European Journals and the three *ChemXChem* journals.

	IF for 2006	Pages in 2006
<i>Chem. Eur. J.</i>	5.015	9422
<i>Eur. J. Inorg. Chem.</i>	2.704	5164
<i>Eur. J. Org. Chem.</i>	2.769	5602
<i>ChemBioChem</i>	4.100	2054
<i>ChemPhysChem</i>	3.45	2606
<i>ChemMedChem</i>	–	1408

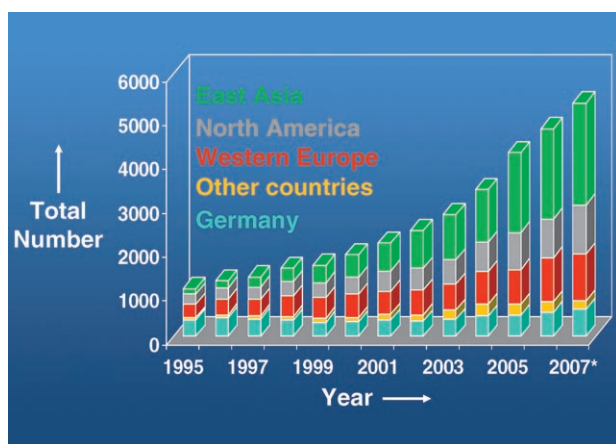


Figure 1. Regional distribution of Communications submitted between 1995 and 2007; * denotes extrapolated figures on the basis of the first six calendar months.

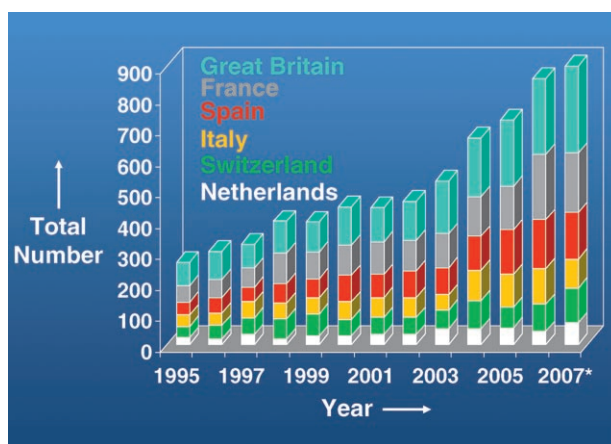


Figure 2. Distribution of Communications submitted from Western Europe between 1995 and 2007; * denotes extrapolated figures on the basis of the first six calendar months.

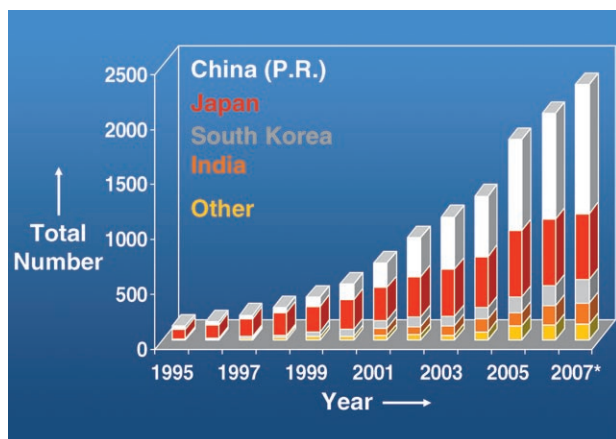


Figure 3. Distribution of Communications submitted from South and East Asia between 1995 and 2007; * denotes extrapolated figures on the basis of the first six calendar months.

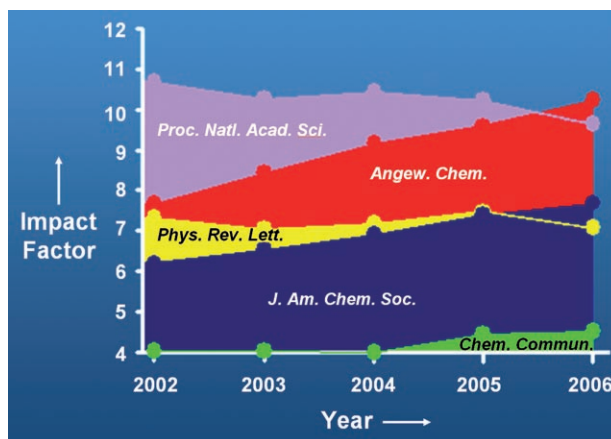


Figure 4. Trends in the Impact Factor from 2002 to 2006; source: Institute of Scientific Information, Philadelphia, USA.

moment to compare how things stood for the predecessor journals in their final year of existence and where the European journals stand today (see Tables 1 and 2), then one can absolutely speak of a sustainable development—especially when one recognizes that from 13 national journals of only regional scope, seven European journals (including *ChemSusChem*) have been created that are highly regarded

the whole world over. The highest Impact Factor for the predecessor journals was 1.8, the lowest among the European journals is now 2.8, and *Chemistry – A European Journal* has an Impact Factor of over 5! On the basis of such a strong result, great things can be expected from *Chemistry – An Asian Journal*. After all, 1724 pages were published in the first 12 months in the Asian “*Chemistry*”, while the European “*Chemistry*” published “only” just over 1000 pages in the same period 12 years ago.

When speaking of sustainable publishing, one has to think these days about open access. For over three centuries, scientific publishing has maintained a

sustainable circulation of scientific findings and has mastered the many challenges presented by the dramatic increase in the amount of scientific information on the one hand and by an astounding advance in technology on the other. Under a movement which is certainly derived from good intentions but masked behind the illusory promise of a catchphrase like open access, would things really run more (cost-)efficiently over the long term?


Angewandte Chemie itself can certainly look back on a sustainable development: Next year the journal will be 120 years old, and the International Edition will turn 50 in 2011! Under the motto “quality first” *Angewandte* has im-



proved its performance figures year after year: the number of submitted and published manuscripts, the international scope (Figures 1–3), the Impact Factor and Immediacy Index, online downloads, and the breadth of its scientific scope; today *Angewandte Chemie* receives articles not only from chemistry institutions and companies, but also from academic and industrial research centers from the biological sciences, engineering sciences, and physics. Thus, a comparison with the top journals of other disciplines is now permissible (Figure 4).

The recent increase in *Angewandte Chemie*'s Impact Factor to over 10 is not making life any easier for the editorial staff: The number of submitted manuscripts will continue to climb. In July 2007, we received, for the first time ever, more than 500 Communications within one calendar month (not to mention Reviews, Highlights, Book Reviews, etc.), which means that in spite of the growth in the number of articles published, even more articles will have to be rejected. Thus, we must ask our referees to take a more critical approach to their evaluations, and we ask our authors to be more self-critical and to be

even more understanding that we cannot possibly accept all manuscripts submitted to us—to be realistic only about 25%! This for all intents and purposes positive development of *Angewandte Chemie* has only been possible thanks to the tireless efforts of our dedicated editorial staff,^[4] thanks to the sound assistance of our distinguished Editorial Board and esteemed International Advisory Board, as well as thanks to the help of innumerable referees from all over the world. Of the more than 4000 referees for the year 2006, several reviewed more than 20 manuscripts! After serving nearly 25 years as Editor-in-Chief, I would like to thank the many faithful readers and authors. I and the rest of the entire editorial staff are indebted to your constructive criticism and loyalty.



Peter Göllitz

PS: Starting in 2008, *Angewandte Chemie* will be publishing 52 instead of 48 issues per year. Is this difference, in a

time of online publishing and daily posting of articles in Early View mode, not more or less trivial? Quite the contrary! In the Early View mode, only the individual articles are recognized, but in an issue, readers are treated to a comprehensive presentation that offers additional incentive to read contributions from outside their own field—an element which for a journal that presents chemistry in all its many facets is indispensable.

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- [1] For the quote, I thank Bernhard Rieger, Technische Universität München.
 - [2] G. M. Whitesides, *Angew. Chem.* **2004**, *116*, 3716–3727; *Angew. Chem. Int. Ed.* **2004**, *43*, 3632–3641.
 - [3] N. Armaroli, V. Balzani, *Angew. Chem.* **2007**, *119*, 52–67; *Angew. Chem. Int. Ed.* **2007**, *46*, 52–66.
 - [4] In 2006, the editorial staff not only handled about 4800 submitted Communications, published about 8000 pages in each of the two versions, and solicited contributions for the various journal sections, but they also spent 300 days attending scientific meetings. Several other details that are perhaps not widely known about *Angewandte Chemie* can be found in the “incredibly” promotional series, which is published in its entirety in this issue.