

# PREFACE

As you begin using the 99th Edition of the *CRC Handbook of Chemistry and Physics*, you will immediately notice a major change in the size and contents of the Print Edition. The number of pages has been considerably reduced, and a number of large comprehensive tables have been shortened. These changes are a reflection of the impact of the Information Revolution, which has enabled the collection, sharing, and dissemination of scientific data, as well as all information, with an ease beyond imagination just 50 years ago.

We at the *CRC Handbook of Chemistry and Physics* are adjusting with the times, and with the majority of users now turning to the Online Edition of the *CRC Handbook*, available at [hbcponline.com](http://hbcponline.com), we are making some major adjustments in our dissemination.

Before discussing these changes further, as Editor-in-Chief, I want to reiterate our three guiding principles.

1. **Quality** comes first; the *CRC Handbook* will never sacrifice the quality of our data compilations for expediency.
2. **Comprehensiveness** is critical; even as the Print Edition of the *CRC Handbook* is reduced in size, all *CRC Handbook* data remains available in the Online Edition.
3. **Growth** is important; as new sub-disciplines of chemistry and physics produce high-quality measurements, the *CRC Handbook* will continue to grow and include such data as selected and reviewed by our experts.

Why have we reduced the number of pages? Quite simply, the Print Edition of the *CRC Handbook* has grown too large to fit into one volume, and adding more pages is virtually impossible. This year, for example, we have added a valuable set of rate constants data for atmospheric chemistry and a similarly important set of persistent line spectra for the atomic elements. We would be unable to include these data in a single-volume Print Edition. We considered breaking the Print Edition into two volumes, but recognizing the growing percentage of usage in the Online Edition, we decided now was the time to make the page reduction in the Print Edition.

How did we do this? The Editorial Team carefully reviewed all content as well as usage figures for the Online Edition. Our final strategy was as follows.

- For very large tables, we selected the most important species for the Print Edition, based on criteria such as their importance in research and commerce, while keeping data for all substances in the Online Edition.
- For several compilations with very extensive bibliographies, we moved the bibliography to be solely in the Online Edition.
- For a small number of very specialized tables of lesser interest to the general *CRC Handbook* users, we also moved them solely to the Online Edition, with cross-references to them from the Print Edition.

We understand that these changes may seem drastic to some of our devoted user community, and I encourage anyone who wants to comment to contact me directly at my e-mail below. If a large number of users ask for a table to be in the Print Edition, we will try to restore it. At the same time, I believe everyone will recognize that in this age of information overload, the dedication to quality, comprehensiveness, and growth that are the hallmarks of the *CRC Handbook of Chemistry and Physics* is more important than ever to the practice of science. We look forward to continuing our services in this new era.

The 99th Edition contains two new tables of major importance.

- Chemical Reaction Rate Constants for Atmospheric Studies — This document contains the latest data on reaction rates and equilibrium constants covering the most important atmospheric chemistry reactions. These data come from the most recent NASA-JPL tables
- Persistent Lines of the Neutral Atomic Elements — This document has line spectra and transition probability data from the latest NIST updates on atomic spectra

We have also made several major additions and improvements that reflect our commitment to keep the *CRC Handbook* up to date with new data.

- Atomic Masses and Abundances — Updated with the new recommendations of the Atomic Mass Data Center
- Bond Dissociation Energies — The latest experimental values for a number of molecules
- Electron Affinities — New measurements, including radicals of importance in combustion
- Interstellar Molecules — Complete list of molecules observed in space to date
- Major World Earthquakes — Updated through 2017
- Atmospheric Concentration of Carbon Dioxide, 1959-2017 — Updated through 2017
- Global Temperature Trend, 1880-2017 — Updated through 2017
- Threshold Limits for Airborne Contaminants — Updated to 2017 recommendations
- Properties and Functions of Common Drugs — Property and functionality data for additional drugs
- Energy Content of Fuels — New fuels of commercial importance
- Flammability of Chemical Substances — Data for additional substances, including commercial mixtures

The Index to the *CRC Handbook* covers properties, processes, general concepts, and classes of substances. Space does not permit an index to individual chemical compounds, but the Online Edition provides searching for compounds on the basis of name, synonym, molecular formula, Registry Number, and structure. For the Print Edition, indexes to the tables "Physical Constants of Organic Compounds" and "Physical Constants of Inorganic Compounds" are available in PDF form by e-mail request to [john.rumble@hbcponline.com](mailto:john.rumble@hbcponline.com).

The success of the *CRC Handbook* is very dependent on feedback from its users. The Editor-in-Chief appreciates any suggestions from readers on proposed new topics for the *CRC Handbook* or comments on how its usefulness may be improved in future editions. Please send your comments to [john.rumble@hbcg.com](mailto:john.rumble@hbcg.com).

Numerous international experts make key contributions to the *CRC Handbook*. These contributors are listed on pages immediately following this Preface. Their efforts play a key role in the quality and diversity of the subject matter covered in the *CRC Handbook*. The sound advice and guidance of the Editorial Advisory Board members, who are listed in the front matter, is very much appreciated. Fiona Macdonald, Senior Publisher – Chemical & Life Sciences, CRC Press/Taylor & Francis Group has been of great assistance and support in providing oversight to ensure that the *CRC Handbook* continues to satisfy the needs of the user community. Thanks are also due to Linda Manis Leggio and Pam Morrell for their detailed, cooperative work and extreme care in the production of the *CRC Handbook*. Special thanks are due to David R. Lide, David Martinsen, and Thomas Bruno for their assistance in support of the Editor-in-Chief.

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