



Green Corrosion Inhibitors: Theory and Practice

By V. S. Sastri

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A book to cover developments in corrosion inhibitors is long overdue. This has been addressed by Dr Sastri in a book which presents fundamental aspects of corrosion inhibition, historical developments and the industrial applications of inhibitors. The book deals with the electrochemical principles and chemical aspects of corrosion inhibition, such as stability of metal complexes, the Hammett equation, hard and soft acid and base principle, quantum chemical aspects and Hansch's model and also with the various surface analysis techniques, e.g. XPS, Auger, SIMS and Raman spectroscopy, that are used in industry for corrosion inhibition. The applications of corrosion inhibition are wide ranging. Examples given in this book include: oil and gas wells, petrochemical plants, steel reinforced cement, water cooling systems, and many more. The final chapters discuss economic and environmental considerations which are now of prime importance. The book is written for researchers in academia and industry, practicing corrosion engineers and students of materials science, engineering and applied chemistry.

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Editorial Review

Review

“They contribute to a clear, lucid reading and understanding, making, this is a valuable text, for both professionals and students of engineering, science, chemistry and metallurgy. The book is enriched by an amazing number of references: 909; some of historical value, other illustrating fundamental aspects and current industrial practice.” (*Materials and Corrosion*, 1 November 2012)

“It could be used as a tutorial and reference by professionals, or as a corrective supplemental text in a conventional graduate or undergraduate course on corrosion.” (Book News, 1 October 2011)

From the Back Cover

A comprehensive resource on the modern aspects of corrosion inhibitors and their applications

The onset of corrosion looms at the core of all chemical processes. If unchecked, corrosion's wrath poses a severe threat not only to worker safety, but to the environment as well. In this book—an important and unique overview of corrosion inhibition science—new technologies for waging battle against various forms of corrosion are thoroughly explored and examined. Focusing on corrosion inhibition in terms of metal complex formation, *Green Corrosion Inhibitors* covers basic principles, historical developments, and modern applications of green corrosion inhibitors with a full range of topics that allow students and practicing engineers to promote a safer and more cost-effective work environment. Discussion includes:

- The application of hard and soft acid base principles
- Ligand field theory
- Photochemistry, quantum theory, and Sastri equation, both inorganic and organic
- The development of green inhibitors and their applications to many metals and their alloys

Corrosion chemistry is rapidly changing as it travels a parallel path alongside strict environmental regulations requiring corrosion inhibitors to be environmentally friendly and safe. Because of this new social awareness, there is a dire need for a resource that helps practitioners apply the most current theory in real-world situations. *Green Corrosion Inhibitors* is that guide, showing that by using a proper inhibitor it is possible to maintain proper protection of materials and improve efficiency, while still remaining environmentally—and fiscally—acceptable.

About the Author

V. S. Vedula Sastri, PhD, has over thirty-five years of experience in corrosion and chemical processes. Since 1994, he has been a consultant for Sai Ram Consultants. Dr. Sastri has written five books, approximately 150 papers in scientific journals, and has edited proceedings for five international conferences of the Metallurgical Society of CIM.

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