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Book review

BOOK REVIEW

Morphology of electrochemically and chemically deposited metals

Authors: KONSTANTIN I. POPOV, STOJAN S. DJOKIĆ, NEBOJŠA D. NIKOLIĆ
and VLADIMIR D. JOVIĆ

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JASMINA S. STEVANOVIĆ*

Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Serbia

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The book titled *Morphology of Electrochemically and Chemically Deposited Metals* by Popov, Djokić, Nikolić and Jović is published on 368 pages with 226 figures, 436 equations, 8 tables and 460 references. It consists of 9 chapters: 1. The Cathodic Polarization Curves in Electrodeposition of Metals; 2. Mechanisms of Formation of Some Forms of Electrodeposited Pure Metals; 3. Current Distribution in Electrochemical Cells; 4. Electrodeposition at a Periodically Changing Rate; 5. Electrodeposition of Metals with Hydrogen Evolution; 6. Electrochemically Produced Metal Powders; 7. Electrodeposited Alloys and Multilayered Structures; 8. Electrodeposited Alloy Powders; 9. Chemical Deposition of Metals and Alloys from Aqueous Solutions.

At first glance, it might be concluded that this book is exclusively written for the academic community, but this is simply not true. Any successful technological development cannot be achieved without the strong fundamental background, and this book offers numerous examples of scientific investigations and possible technological applications. Chapters 1–8 (written by Popov, Nikolić and Jović) are a result of long-lasting investigations performed at world-famous Belgrade Electrochemical School, which already contributed immensely on the investigation of metal deposits morphology and the mechanism of formation. Chapter 9 (written by Djokić) was completed at University of Alberta, although I have to reveal that the author of this chapter is also an “offspring” of Belgrade Electrochemical School. Influence of various parameters and regimes of electrolysis, as well as various methods of chemical deposition have been systematically

* E-mail: jaca@tmf.bg.ac.rs

researched over time period of almost fifty years, and as a result, we have today this book devoted to morphologies of electrochemically and chemically deposited metals and alloys.

Morphology of Electrochemically and Chemically Deposited Metals is, to some extent, a continuation of the book *Fundamental Aspects of Electrometallurgy* by K. I. Popov, S. S. Djokić and B. N. Grgur, Kluwer Academic/Plenum Publishers, New York, 2002), but it brings a significant novelty and hence differences in relation to it, as a consequence of intensive investigations performed in the last fifteen years. For example, the effect of hydrogen evolution on metal electrodeposition at constant and at periodically changing rate (Chapter 5), novel approach to investigation of the pure metal powders production by electrolysis (Chapters 6), electrodeposition of alloys and multilayered structures (Chapter 7) and alloy powders formation by electrolysis (Chapter 8) represent completely new and original contributions that make a difference between this book and the previously published. At the same time, some of the chapters given in this book (Chapters 3, 4 and 9) are also supplemented and rearranged in relation to the book *Fundamental Aspects of Electrometallurgy* from 2002.

Its particular concept is why this book differs from all the other books on the same topic. *Morphology of Electrochemically and Chemically Deposited Metals*, being primarily devoted to morphologies of electrochemically and chemically deposited metals and alloys, represents impressive collection of microphotographs of electrodeposited crystals in all their variety. Mathematical models, along with these microphotographs explain all known electrodeposited phenomena in detail. I would like to especially stress concept of Chapters 1 and 2. In the Chapter 1, all forms of polarization curve equations are considered and experimentally confirmed. Correlation between the polarization characteristics and the type of electrodeposition control gives completely new insight into the mechanism of electrodeposition processes. On the other hand, mechanisms of formation of almost all existing morphological forms that could be obtained by electrodeposition of pure metals are given in Chapter 2, Electrodeposition of alloys and multilayered structures, as well as mechanism of the electrodeposition of alloy powders are very graphically presented in Chapters 7 and 8. Finally, Chapter 9 gives impressive review of all the phenomena related to the processes of chemical deposition of metals and alloys.

Finally, I have to point out the fact that *Journal of the Serbian Chemical Society* is not selected by chance to present this book review. Almost 45 papers published on the subject matter in the *Journal of the Serbian Chemical Society* in the last fifty years were used for writing this book. Furthermore, Chapter 3 is almost entirely written on the basis of the results previously published in the Journal.

ИЗВОД
ПРИКАЗ КЊИГЕ: MORPHOLOGY OF ELECTROCHEMICALLY AND CHEMICALLY
DEPOSITED METALS
(МОРФОЛОГИЈА ЕЛЕКТРОХЕМИЈСКИ И ХЕМИЈСКИ ТАЛОЖЕНИХ МЕТАЛА)

АУТОРИ: КОНСТАНТИН И. ПОПОВ, СТОЈАН С. ЂОКИЋ, НЕБОЈША Д. НИКОЛИЋ и ВЛАДИМИР Д. ЈОВИЋ
ЈАСМИНА С. СТЕВАНОВИЋ

Институт за хемију, технологију и металургију, Универзитет у Београду, Београд

Дат је основни приказ књиге која има 9 поглавља са 368 страна, 226 слика, 436 једначина, 8 таблица и 460 литературних навода. Књига је синтеза скоро педесетогодишњих истраживања у области електрохемијског таложења метала и обухвата, поред осталих, око 45 радова публикованих током наведеног периода у *Journal of the Serbian Chemical Society*.

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