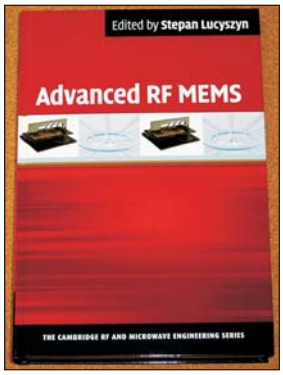
From February 2011 *High Frequency Electronics*

DESIGN NOTES

New Books for Engineers

Advanced RF MEMS

Stepan Lucyszyn, Editor
Cambridge University Press (www.cambridge.org)
Hardback: ISBN 978-0-521-89771-6



This book is the work of 22 contributors, resulting in a comprehensive look at an important developing technology. It is organized as *review, reliability and applications*—beginning with a review of MEMS technologies, especially switches; continuing with an extensive look at reliability issues that have affected the ability to achieve commercial development; followed by a very useful summary of key MEMS applications in various reconfigurable systems.

Ch 1 *Introduction*
Ch 2 *Electromechanical modeling of electrostatic actuators*
Ch 3 *Switches and the fabrication techniques*
Ch 4 *Niche switch technologies*
Ch 5 *Reliability*
Ch 6 *Dielectric charging*
Ch 7 *Stress and thermal characterization*
Ch 8 *High-power handling*
Ch 9 *Packaging*
Ch 10 *Impedance tuners and tuneable filters*
Ch 11 *Phase shifters and tuneable delay lines*
Ch 12 *Reconfigurable architectures*
Ch 13 *Industry roadmap for RF MEMS*

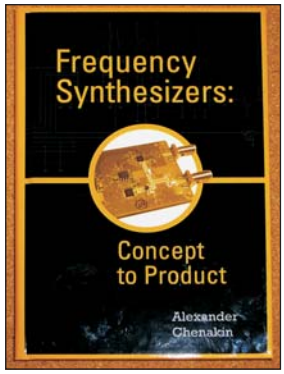
The book is not intended as a stand-alone text on MEMS; it was conceived a a complement to existing texts such as *RF MEMS: Theory, Design and Technology*, by Gabriel M. Rebeiz. It focuses on recent work, which is now focused on practical manufacturing and applications, e.g., putting MEMS to work in real applications that can benefit from the advantages that MEMS can provide—low loss, minimal impedance discontinuity, high isolation and small size.

The contributors are associated, directly or indirectly, with an EU-based (and funded) Network of Excellence, called Advanced MEMS for RF and Millimetre-Wave Communications (AMICOM). Although based in Europe, the contributors include researchers from Asia and the U.S.

The earliest references included in this book are from 2002! MEMS is indeed a modern technology, requiring books like this to educate the engineering community.

Frequency Synthesizers: Concept to Product

Alexander Chenakin
Artech House (www.artechhouse.com)
Hardback: ISBN 978-1-59693-230-2



Frequency synthesizers are the primary frequency control method for virtually all products that use RF and microwave technology, from low cost consumer products to advanced medical equipment and the highest-performing military systems.

Although this is a short book (214 pages), it provides a solid review of both synthesizer technology and the art of practical implementation in a finished product. The author's intention is to provide a foundation of knowledge on this subject for engineers in their early years of practice, supplementing (and often summarizing) the vast amount of information available in the literature—journal articles, academic papers, application notes and many published design examples.

Ch 1 *Parameters and Architectures*
Ch 2 *Building Blocks*
Ch 3 *Synthesizer Construction*
Ch 4 *Design Process*
Ch 5 *Improving Performance*
Ch 6 *Advanced Functions*

A significant portion of the material will be useful to non-engineers within the RF/microwave industry. Professionals in management, sales, industry analyst and other roles should be able to bypass the technical details and still gain insight into synthesizer technology. In particular, Chapters 2 and 3 do a good job presenting the circuit functions that go into a synthesizer product, along with the issues that affect development of working hardware that implements the desired operating functions and performance.