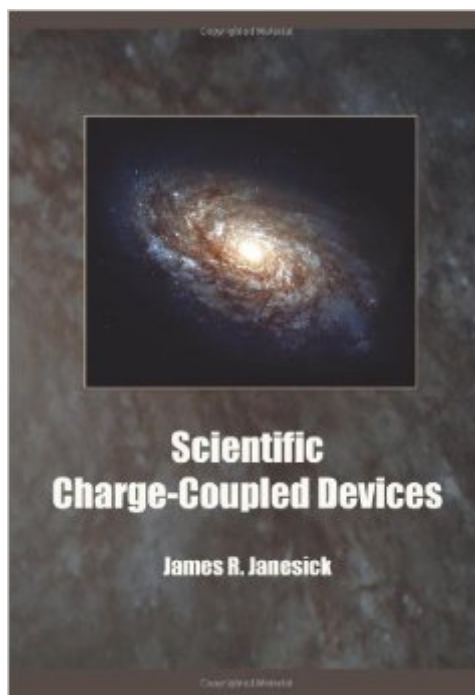


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# Scientific Charge-Coupled Devices (SPIE Press Monograph Vol. PM83)



## Synopsis

The invention of the charge-coupled device 30 years ago was the beginning of a remarkable image capture technology that has changed the course of imaging in fields ranging from astronomy to biotechnology. This book presents a comprehensive history, tutorial, and state-of-the-art description of CCDs and is intended for scientists, engineers, imaging hardware managers, and graduate students. Contents - Preface - History, Operation, Performance, Design, Fabrication and Theory - CCD Transfer Curves and Optimization - Charge Generation - Charge Collection - Charge Transfer - Charge Measurement - Noise Sources - Damage - Appendices - Glossary of CCD Terms - Index

## Book Information

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## Customer Reviews

Everything you wanted to know about designing and building CCD cameras is contained in this book. Details of how the device works (from a solid-state physics/EE perspective) are outlined. Janesick describes the fundamental operation of the devices: how the charge is generated, collected, transferred, and read out. This book is also a practical manual as well and contains circuit diagrams and lots of useful tips and gotchas for building a working, low-noise, state of the art CCD camera. CCDs have, at some level, been displaced by CMOS imagers and other types of sensors, but anyone working with these technologies will find a wealth of knowledge in this tome. I would highly recommend this book to any professional working with any type of solid-state imager. The

author, while working at JPL and elsewhere, played a critical role in the development of scientific grade CCDs over the past twenty years. This book represents the culmination of lectures, monographs, and professional papers that he wrote over twenty years or more in the field. It is really a core dump of all his accumulated knowledge. Be warned that this is an advanced book, suitable for graduate students or professionals (primarily EEs and astrophysicists) working with CCDs and other solid state imagers in either the astronomical or defense fields. If you are an amateur trying to put a CCD camera on the back of a telescope in your backyard to look at Mars, or you know a bit about electronics and want to learn how your digital camera works, this is not the book for you.

Absolutely fabulous reference for anyone interested in how CCDs work, and how to make them work. I highly recommend this as a resource: the material is purely technical and laden with physics and math... not a layman's explanation. Also has great experience to relate and plenty of practical information on getting your system performance up.

This book is great. It gives plenty of information to understand what a CCD is and how it works. It is easy to read, and there are plenty of examples of calculations to help understand the physics of the CCD.

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