



Opinion

History of the Universe

Alwyn Eades

Professor of Materials Science and Engineering Emeritus, Lehigh University, Bethlehem, PA 18015

jae5@lehigh.edu

Some time ago, at M&M, I gave a tutorial on electron diffraction. This turned out to be a more foolish enterprise than I had initially imagined. When it came time to prepare it, I found that there was just far too much to say. At the start of the tutorial I asserted that it would be easier to give a complete history of mankind in 30 seconds than to give a tutorial on electron diffraction in one hour. At the end of the tutorial, to prove my point, I gave a history of mankind in thirty seconds. I have expanded this idea recently to be more comprehensive. Now I have a history of the universe, which takes me forty-five seconds to read (I am a slow reader).

Here it is:

10 ¹⁰ years ago	The Universe started
10 ⁹ years ago	Life began
10 ⁸ years ago	Mammals
10 ⁷ years ago	The first apes
10 ⁶ years ago	Humanoids
10 ⁵ years ago	Mankind and language
10 ⁴ years ago	Cities and writing
10 ³ years ago	Manufacturing
10 ² years ago	Modern science
10 ¹ years ago	Man on the moon
10 ⁰ years ago	The Kardashians

MT

CAMBRIDGE

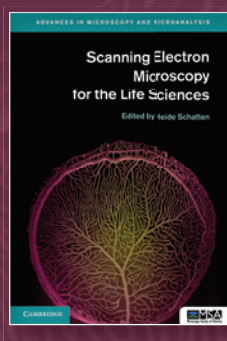
New to the **Advances in Microscopy and Microanalysis** book series!

Scanning Electron Microscopy for the Life Sciences

Heide Schatten

University of Missouri, Columbia

US\$120.00: Hb: 978-0-521-19599-7: 312 pp



Recent developments in scanning electron microscopy (SEM) have resulted in a wealth of new applications for cell and molecular biology, as well as related biological disciplines. It is now possible to analyze macromolecular complexes within their three-dimensional cellular microenvironment in near native states at high resolution, and to identify specific molecules and their structural and molecular interactions. New approaches include cryo-SEM applications and environmental SEM (ESEM), staining techniques and processing applications combining embedding and resin-extraction for imaging with high resolution SEM, and advances in immuno-labeling. With chapters written by experts, this guide gives an overview of SEM and sample processing for SEM, and highlights several advances in cell and molecular biology that greatly benefited from using conventional, cryo, immuno, and high-resolution SEM.

About the series

The Press currently publishes the Microscopy and Microanalysis (MAM) journal in conjunction with the MSA, which reaches 4,000 microscopists and is affiliated with 12 international microscopy societies. The series would be a natural development from this journal, and will take a broad view of the discipline, covering topics from instrumentation to imaging, methodology and analysis across physical science, materials science, biology and medicine. Books commissioned for the series will range from advanced undergraduate textbooks through to research and practitioner oriented monographs for researchers. The series aims to produce a coherent source of material, encouraging the communication and exchange of ideas across these divergent fields, ensuring that the series appeals to a broad community in the physical and life sciences.

Forthcoming titles in this series:

Microscopic Nanocharacterization of Materials

by Michael Isaacson

Energy Filtered Electron Microscopy and Electron Spectroscopy

by Richard Leapman

Dynamic Transmission Electron Microscopy

by Nigel Browning, Thomas LaGrange, Bryan Reed, Henning Stahlberg, Bradley Siwick



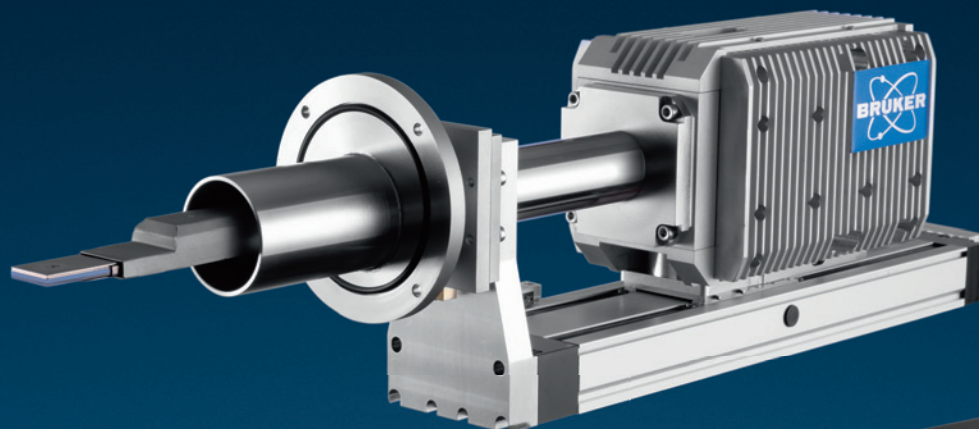
www.cambridge.org/us

800.872.7423



CAMBRIDGE
UNIVERSITY PRESS

Someone has to be first. XFlash® FlatQUAD, multiple detector systems & VZ



Analyze textured samples with ease.



- The unique XFlash® FlatQUAD offers a large solid angle and an amazing take-off angle. This minimizes shadowing so you can see every nook and cranny of your sample in record time.
- Bruker's multiple detector systems provide large solid angles and great take-off angles too. You can start with one detector building up to four, depending on your needs.
- The Variable Z (VZ) adapter allows you to optimize take-off angles in-situ, which significantly improves the analysis of topographically challenging samples.

Someone has to be first.



www.bruker.com/quantax-flatquad