

Fluorescence microscopy is used for studying the distribution of substances which are present in very small amounts. The high sensitivity of the method makes it ideal for studying the distribution of substances in living cells. Its techniques are used mainly in biology and medicine, but are also valuable in coal petrology and elsewhere. The best-known application is in immunofluorescence.

This new work provides comprehensive coverage of all aspects of fluorescence microscopy. It covers instrumentation, applications to a wide variety of fields, and the history of the technique. There is a chapter on quantitative techniques, including scanning: this aspect is dealt with in more detail in a companion volume, *Quantitative fluorescence microscopy*.

Volume I deals with instrumentation and techniques for fluorescence microscopy, and includes a chapter on quantification and scanning. It gives practical information on how to use fluorescence microscopes, as well as explaining the underlying theory. The technique of photographing fluorescence is explained in detail.

Volume II deals with the applications of fluorescence microscopy in many fields. It includes information on fluorochromes and on autofluorescence. An invaluable appendix provides an alphabetical list of fluorochromes, giving information concerning chemical structure, fluorescence properties, applications and suitable filter combinations.

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F. W. D. Rost  
Frontmatter  
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# Fluorescence microscopy

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VOLUME II



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## Preface

My goals in preparing this book have been to describe, firstly, the structure and use of fluorescence microscopes; secondly, the basic physical and chemical principles involved, so that the fluorescence microscopist will understand what is happening; and thirdly, some of the various applications of fluorescence microscopy, in broad overview, to alert users to techniques which might be useful to them. I have assumed that the reader consulting this book will usually have a practical problem and desire a pragmatic answer; accordingly, the main part of the text describes current knowledge and techniques; and therefore almost all purely historical considerations are dealt with separately in Volume II, Chapter 16.

I originally intended to deal with quantitative aspects in more detail, spread over some 15 chapters, but later it was decided to publish the quantitative chapters as a separate book (*Quantitative fluorescence microscopy*) and to summarize quantitative aspects in a single chapter in the present volume. *Quantitative fluorescence microscopy* also discusses, in greater detail, scanning microscopy (including confocal microscopy) and some other topics which are best studied quantitatively, such as photobleaching (fading).

Similarly, we decided to print *Fluorescence microscopy* as two volumes. The first volume deals with the microscope and the technique of using it; the second volume discusses applications of fluorescence microscopy and (in the last chapter) the history of fluorescence microscopy.

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*Fred Rost*  
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