

Sidney P. Colowick and Nathan O. Kaplan

Methods in ENZYMOLOGY

Volume 133

Bioluminescence and Chemiluminescence

Part B

Edited by

Marlene A. DeLuca

William D. McElroy

Methods in Enzymology

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*Bioluminescence and
Chemiluminescence*

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Preface

Since the publication of Volume LVII of *Methods in Enzymology* on Bioluminescence and Chemiluminescence in 1978 (edited by Marlene A. DeLuca), many new and exciting developments have occurred in the field. For example, the genes encoding firefly luciferase, bacterial luciferase, and aequorin have recently been cloned and expressed. Novel new approaches to chemiluminescent assays have been reported during the past six years. Several international symposia have been devoted to luminescent assays. Judged by the response from our colleagues, the time seemed appropriate for an updating of the various techniques that have been used in this research.

In Section I we attempt to cover the major developments in bioluminescence. This includes basic science and some applications of the firefly, bacterial, *Renilla*, *Aequorea*, and dinoflagellate luciferases. Special techniques on the cloning of luciferases and the immobilization of the light-emitting systems leading to automated continuous flow assays have been included. Space prevents a comprehensive coverage of all of the applications of these techniques; however, we have tried to include representative types of all assays. A more complete coverage can be found in publications resulting from recent symposia. Section II is devoted to the major recent advances in chemiluminescence. Included in these papers is excellent coverage of various acridinium esters and their use in immunoassays, haptens and protein interaction, horseradish peroxidase-enhanced chemiluminescence, phagocytic leukocyte oxygenation as revealed by luminescence, and chemiluminescent probes for singlet oxygen in biological reactions.

Section III contains a chapter on the characteristics of commercial luminometers.

We would like to take this opportunity to thank our colleagues for their many suggestions and, in particular, recognize the cooperation of the authors for their timely reviews. As usual the staff of Academic Press was very helpful in organizing the material for publication.

MARLENE A. DELUCA
WILLIAM D. MCELROY

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