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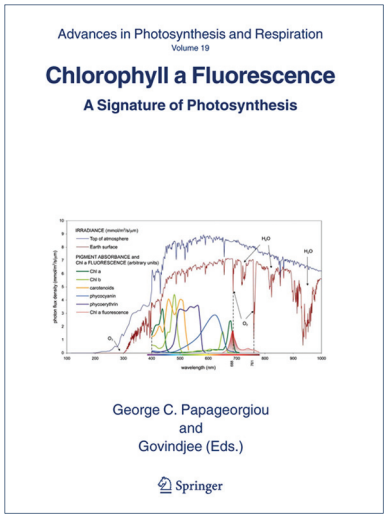

Chlorophyll a Fluorescence

A Signature of Photosynthesis

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Govindjee, University of Illinois, Urbana, IL, USA (Eds.)

Chlorophyll a Fluorescence: A Signature of Photosynthesis highlights chlorophyll (Chl) a fluorescence as a convenient, non-invasive, highly sensitive, rapid and quantitative probe of oxygenic photosynthesis. Thirty-one chapters, authored by 58 international experts, provide a solid foundation of the basic theory, as well as of the application of the rich information contained in the Chl a fluorescence signal as it relates to photosynthesis and plant productivity. Although the primary photochemical reactions of photosynthesis are highly efficient, a small fraction of absorbed photons escapes as Chl fluorescence, and this fraction varies with metabolic state, providing a basis for monitoring quantitatively various processes of photosynthesis. The book explains the mechanisms with which plants defend themselves against environmental stresses (excessive light, extreme temperatures, drought, hyper-osmolarity, heavy metals and UV). It also includes discussion on fluorescence imaging of leaves and cells and the remote sensing of Chl fluorescence from terrestrial, airborne, and satellite bases. The book is intended for use by graduate students, beginning researchers and advanced undergraduates in the areas of integrative plant biology, cellular and molecular biology, plant biology, biochemistry, biophysics, plant physiology, global ecology and agriculture.

From the reviews: ► „...The subtitle of the book is very significant. Rather than merely describing in vivo Chla spectra, as the main title might imply, the book does concentrate on the „signature of photosynthesis" theme. The editors thereby create a highly practical textbook on the optical aspects of photosynthesis itself." (Robert S. Knox, Photosynth. Res., 2005)
► „This excellently composed book is primarily intended for readers from advanced undergraduates to researchers in plant sciences, microbiology, biochemistry and biophysics. It can be widely recommended to a large readership and is much welcomed by the scientific community. For many years to come, this book will be the basic standard work on Chl fluorescence providing not only a broad overview on all aspects and application possibilities but – in addition - it will be the starting point for future research in this fascinating field of photosynthetic energy conversion and plant biology." (Claus Buschmann, J. Plant Physiol., 2005)
► This book is one of the most comprehensive treatises on this subject. It is edited by two pioneers and leading experts in this field. The major importance of the present volume lies in providing the readers the wide spectrum of use of Chlorophyll a fluorescence technique and giving considerable guideline for its numerous applications. The book is, therefore, likely to satisfy both the professional and general readers." (B. Vani, S.R. Mishra and G.B. Kashpuri, Ind. J. of Biochem. and Biophys., 2005)

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