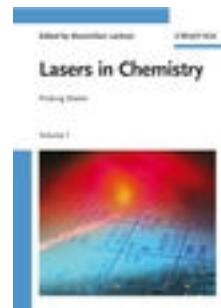


[Chemistry - Methods - Synthesis & Techniques, Analytical Chemistry, Optics & Laser Physics]

## 化学とレーザー - 物質の計測と制御

### Lasers in Chemistry: Probing and Influencing Matter

**Maximilian Lackner**, Vienna University of Technology, Vienna, Austria



#### 本書について:

2巻構成の本書は、分光学や光化学における類書と異なり、レーザー光と化学物質・材料との相互作用に焦点を絞り、化学物質と反応のプロービングと制御を詳細に論じる。本書は、当分野に足を踏み入れたばかりの初学者と、既にこの分野で研究の実績を持ち、より広範な知識を求める専門家との両方に対応している。レーザーの原理や安全性、また光学とファイバーのような周辺領域も取り上げられる。

#### TABLE OF CONTENTS

##### **Vol. I: PROBING MATTER**

**PART I: GENERAL** Principles of Lasers / Laser Safety

**PART II: LASERS AS PROBES IN CHEMISTRY** Overview: Absorption, Emission and Scattering / Chemical Sensors based on Quantum Cascade Lasers / Laser Diagnostics of Combustion Processes / LIDAR for ground- and airborne trace gas detection / Non-linear Spectroscopy / Photoacoustic spectroscopy / Tunable diode laser absorption spectroscopy / Applications of tunable diode laser absorption spectroscopy in process industries / Laser-induced breakdown spectroscopy (LIBS) / Laser Doppler Anemometry (LDA) / Cavity ring-down spectroscopy in chemistry / Laser spectroscopy applied to catalysis research / Speciation analysis using lasers / Laser Enhanced Spectroscopy and Coherent Control / Laser-induced fluorescence spectroscopy (LIF) / Laser applications in combustion engine R&D / Raman spectroscopy / MALDI / MALDI-MS of Industrial Chemicals and Polymers / Atmospheric-Pressure Laser Ionization / High-resolution molecular spectroscopy in low-temperature crystalline matrices

##### **Vol. II: MANIPULATING MATTER**

**PART III: LASERS TO START AND INFLUENCE CHEMICAL REACTIONS** Overview / Laser-based Formation of Nanoparticles / Laser ablation / Laser induced photocatalysis and its applications / Laser enrichment of isotopes / Reaction mechanisms in the gas phase studied by laser pyrolysis / Femtochemistry: Lasers to investigate ultrafast reactions / Laser-plasma chemistry: chemical reactions initiated by laser-produced plasmas / Laser micromachining / Laser-CVD / Laser-induced ignition for combustion engines / Laser-induced photopolymerisation / Laser control of chemical reactions / Control of Chemical Dynamics with Lasers / Nanosecond Laser Flash Photolysis / Lasers in semiconductor photochemistry / Lasers in Photodynamic Therapy / Photo reactions induced by two-photon-absorption / Laser-Microwave in Chemistry

**PART IV: APPLICATIONS** Lasers in Material Processing / Lasers in Biology / Lasers in Medicine / Lasers in conservation and preservation for art and architecture / Lasers in dentistry

**PART V: PAST AND FUTURE TRENDS** History of Lasers in Chemistry / Trends of laser research and development / Outlook

出版:2008年9月 ページ数(約):1,264(全2巻) ISBN13:978-3-527-31997-8

価格: US\$505

(上記2008年12月現在/変動あり)

◆ご注文は洋書店にお願いします

◆資料ご請求、ご質問は——ワiley・ジャパン

〒112-0002 東京都文京区小石川1-28-1

フロンティア小石川ビル4F

TEL 03-3830-1232 FAX 03-5689-7276

日本語ホームページ: [www.wiley.co.jp](http://www.wiley.co.jp)

取扱書店