

EDITORS

ELIZABETH L. TANZI & JEFFREY S. DOVER

VIDEO EDITOR **LEAH K. SPRING**



Enhanced
**DIGITAL
VERSION**
Included

LASERS, LIGHTS, and ENERGY DEVICES

FIFTH EDITION

PROCEDURES IN COSMETIC DERMATOLOGY

SERIES EDITORS: **JEFFREY S. DOVER & MURAD ALAM**



Elsevier
1600 John F. Kennedy Blvd.
Ste 1800
Philadelphia, PA 19103-2899

PROCEDURES IN COSMETIC DERMATOLOGY: LASERS, LIGHTS,
AND ENERGY DEVICES, FIFTH EDITION

ISBN: 978-0-323-82905-2

Copyright © 2023 by Elsevier Inc. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. Details on how to seek permission, further information about the Publisher's permissions policies and our arrangements with organizations such as the Copyright Clearance Center and the Copyright Licensing Agency, can be found at our website: www.elsevier.com/permissions.

This book and the individual contributions contained in it are protected under copyright by the Publisher (other than as may be noted herein).

Notice

Practitioners and researchers must always rely on their own experience and knowledge in evaluating and using any information, methods, compounds, or experiments described herein. Because of rapid advances in the medical sciences, in particular, independent verification of diagnoses and drug dosages should be made. To the fullest extent of the law, no responsibility is assumed by Elsevier, authors, editors, or contributors for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions, or ideas contained in the material herein.

Previous Editions 2013, 2009, and 2005.

Content Strategist: Charlotta Kryhl
Content Development Specialist: Akanksha Marwah
Content Development Manager: Somodatta Roy Choudhury
Publishing Services Manager: Shereen Jameel
Project Manager: Haritha Dharmarajan
Design Direction: Patrick Ferguson

Printed in India

Last digit is the print number: 9 8 7 6 5 4 3 2 1



Working together
to grow libraries in
developing countries

www.elsevier.com • www.bookaid.org

CONTENTS

1. Understanding Lasers, Light Sources, and Other Energy-Based Technology, 1

Kelly O'Connor and Jeffrey S. Dover

2. Laser Treatment of Vascular Lesions, 11

*Kristen M. Kelly, Lisa Arkin, Erica G. Baugh,
and Jennifer M. Tran*

3. Laser Treatment of Pigmented Lesions and Tattoos, 25

Kerry Heitmiller, Thomas E. Rohrer, and Mona Sadeghpour

4. Laser Hair Removal, 54

Omar A. Ibrahim, Suzanne L. Kilmer, and Farah Moustafa

5. Treatment of Skin With Intense Pulsed Light Sources, 72

*Jeremy Brauer, Karen J. Dover, Jacqueline Watchmaker,
and Courtney Gwinn*

6. Nonablative Fractional Laser Skin Rejuvenation, 85

*Jacqueline Watchmaker, Jeffrey S. Dover, Bradley S. Bloom,
and Leah Spring*

7. Nonsurgical Skin Tightening, 104

Michael S. Kaminer, Courtney Gwinn, and Karen J. Dover

8. Photodynamic Therapy, 127

Macrene Alexiades

9. Ablative Laser Skin Resurfacing, 137

Jacob J. Inda and Joel L. Cohen

10. Nonsurgical Body Contouring of Fat, 152

Lauren Meshkov Bonati and Omer Ibrahim

11. Muscle Toning and Contouring, 167

Leah Spring and John Peters

12. Radiofrequency Microneedling, 176

*Marcus G. Tan, Anne Chapas, Jennifer MacGregor,
and Shilpi Khetarpal*

13. Laser Treatment of Ethnic Skin, 192

*Kachiu Lee, Shraddha Desai, Mara Weinstein Velez,
and Deborah Paul*

14. Treatment of Acne With Light and Energy-Based Devices, 206

*Mitchel P. Goldman, Emily Wood, Rawaa Almkhtar,
and Steven Krueger*

15. Complications and Legal Considerations of Laser, Light, and Energy-Based Treatments, 221

Saleh Rachidi and David J. Goldberg

Index 229