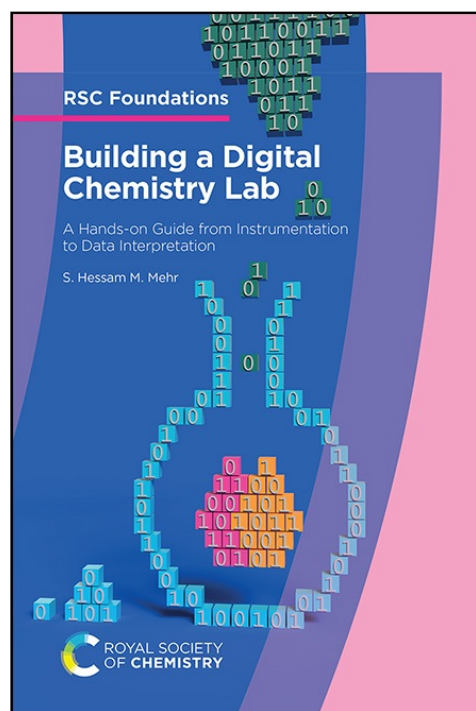


Advance Book Information



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Building a Digital Chemistry Lab

A Hands-on Guide from Instrumentation to Data Interpretation

S Hessam M Mehr University of Glasgow, UK

Synopsis

Laboratory automation, new sensors and artificial intelligence are set to revolutionise the way we do science. But how can you get started incorporating these technologies into your lab? Offering practical, accessible guidance across a range of relevant topics this book has the answers. Discussing challenges including implementation of custom instrumentation, use of robotics and how to collect and manage data it provides a solid starting point for building your own digital lab.

Key Features and Highlights

- Focuses on practical challenges including implementing custom instrumentation, use of automation and robotics and collecting and managing data.
- Provides real world examples to illustrate what can be achieved.
- Demonstrates the connection between experimental methodology and machine learning.

Brief Contents

- What is a Digital Chemistry Lab?
- Automation and Robotics in the Modern Chemistry Lab
- Designing and Implementing Custom Labware
- Data Acquisition, Processing, and Interpretation
- Examples and Case Studies
- Summary and Further Learning

Publisher: Royal Society of Chemistry

ISBN: PB 9781837072118
EPUB 9781837679980
PDF 9781837072125

Price: £45.00 | \$63.00 | €56.25

Publication Date: 02 November 2026

Date:

Target Audience: College/higher education, Professional and scholarly

Size: 234 x 156 (Royal 8vo) mm

Pages: 116

BIC: PDN, GPS, TBM

THEMA: PDN, GPS, UP, TBM

BISAC: SCI028000, SCI076000,

SCI093000

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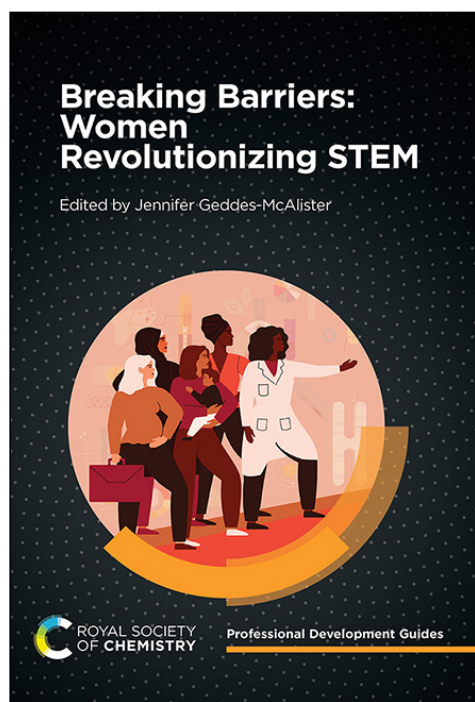
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Breaking Barriers: Women Revolutionizing STEM

Jennifer Geddes-McAlister University of Guelph, Canada

Synopsis

This empowering book explores the persistent gender gap in STEM, focusing on the unique challenges faced by women—especially mothers—in academia, industry, and government. Through interviews, research, and global case studies, it highlights cultural and structural barriers while offering strategies for success, institutional change, and personal empowerment. Featuring inspiring stories and practical solutions, it's a vital resource for anyone committed to equity in STEM and supporting women, parents, and carers in science and technology careers.

Brief Contents

- An Introduction to Breaking Barriers: Women Revolutionizing STEM
- Strategies to Empower and Overcome Challenges: A Case Study from Belgium
- The Funding Gap in Norway: A Comparison of European and Norwegian Research Councils Policies on
- Eligibility Extension Due to Maternity Leave
- Perspective on the Role of Women in Canadian Academic Institutions
- Women Scientists of India Who Broke the "Glass Ceiling" in Biological Sciences
- Perspective on Challenges Faced by Graduate Students and Postdoctoral Scholars in Canada
- Moms in Academia: Striking the Balance of Mothering and Mentoring
- A Reflection of Sadness and Mistrust for a System Built to Support
- A Self-portrait with Personal Perspectives
- Transitioning Between Academia and Industry
- Transitioning from Industry to Government
- Academic Careers, Relocation, and the Complex Realities of Divorce
- Embracing Cooperative Leadership Amidst a Competitive Work Culture: Personal Reflections from a Mid career Female in Environmental Sciences
- Women Leaders and Strategies to Empower and Overcome Challenges
- Occupational Exposures to Chemicals in STEM Research and Risk for People Who Are Pregnant, Intend to Be Pregnant or Are Chest/Breastfeeding: A Narrative Review for Women in STEM
- Motherhood and Mental Health in STEM
- Global Initiatives Supporting Women in STEM
- Funding Foundations Driving Positive Change for Women and Mothers in STEM
- Synergy Scientific: Empowering the Humans Behind the Science to Lead, Thrive, and Innovate with Heart
- Moms in Proteomics: Building Community, Recognition, and Change
- Epilogue

Publisher: Royal Society of Chemistry

ISBN: PB 9781837672523
EPUB 9781837678815
PDF 9781837678822

Price: £29.99 | \$42.00 | €38.00

Publication Date: 26 June 2026

Date:

Target Audience: College/higher education, ,

Audience: Professional and scholarly

Size: 234 x 156 (Royal 8vo) mm

Pages: 226

BIC: VSC, JNR, PD, JNM

THEMA: KJMV22, VSC, PD, 4CT, 5JA, 5PN

BISAC: EDU031000, SCI000000, EDU015000

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Multifunctional Epidermal Patches

From Design to Application

Jagan Mohan Dodda University of West Bohemia, Czech Republic

Nureddin Ashammakhi Michigan State University, USA

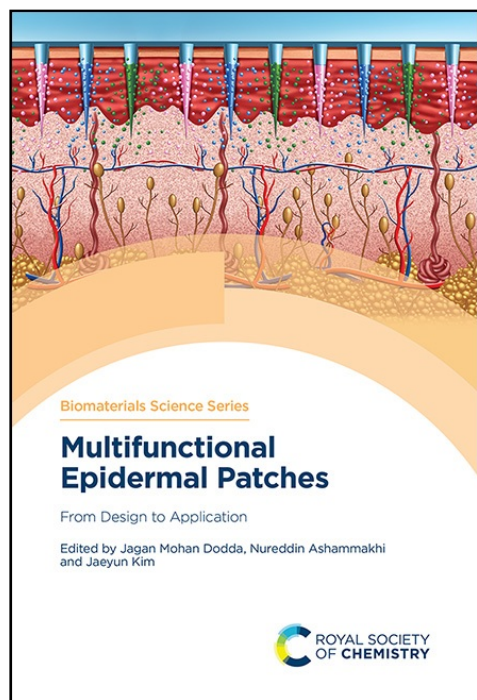
Jaeyun Kim Sungkyunkwan University, Republic of Korea

Key Features and Highlights

- Covers fundamentals, structure, synthesis methods, characterizations, physico-chemical and biological properties of skin adhesive patches.
- A comprehensive review of recent accomplishments and key scientific and technological challenges in the field of smart patches.
- An exclusive book providing deep insight into the therapeutic, diagnostic, pharmaceutical and clinical applications of skin adhesive patches.

Brief Contents

- Introduction to Multifunctional Epidermal Patches
- Skin Adhesive Patches: Introduction, Classification and Biomedical Applications
- Fabrication of Smart Skin Patches
- Characterization of Smart Patches
- Transdermal Patches: Design and Current Approaches
- Mathematical Models of Transdermal Delivery in Patches
- Hydrogel Based Skin Adhesive Patches
- Smart Microfluidic Patches
- Smart Self-healing Patches
- Smart Patches for Bone Tissue Regeneration
- Smart Patches for Wound Management
- Smart Nanocomposite Patches for Biomedical Applications
- Smart Neural Patches
- Advances in Smart Cardiac Patches
- Smart Wearable Patches: Current Stage and Emerging
- Smart Electronic Skin (E-skin) Patches for Health Monitoring
- Self-powered E-skin Patches
- Stretchable Sensors for E-skin Patches
- Recent Advances in Mucosal Surface Patches
- Smart Bioresorbable Patches
- Toxicity, Regulatory Considerations, and Commercialization Aspects of Smart Patches
- Current and Future Prospects for Smart Patches



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Publisher: Royal Society of Chemistry
ISBN: HB 9781837677733
EPUB 9781837677740
PDF 9781837677757
Price: £219.00 | \$305.00 | €275.00
Publication Date: 11 November 2026
Target Audience: Professional and scholarly
Size: 234 x 156 (Royal 8vo) mm
Pages: 808
BIC: TGB, TCB, MBG, MQW, TDCW
THEMA: TGML, MBG, MQW, TDCW
BISAC: TEC009070, SCI010000,
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Series: Biomaterials Science Series
Volume 23

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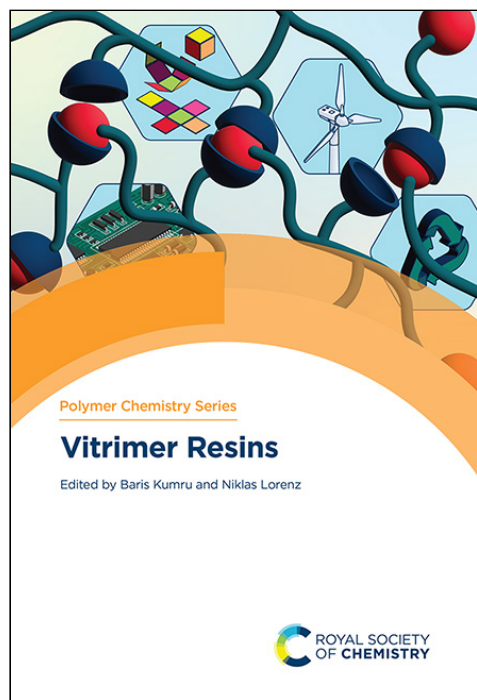
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Publisher: Royal Society of Chemistry
ISBN: HB 9781837679478
EPUB 9781837679485
PDF 9781837679492
Price: £209.00 | \$290.00 | €260.00
Publication Date: 16 October 2026
Target Audience: Professional and scholarly
Size: 234 x 156 (Royal 8vo) mm
Pages: 462
BIC: PNNP, TGB, TDCP
THEMA: PNNP, TGMP
BISAC: TEC009070, TEC055000,
SCI013040
Series: Polymer Chemistry Series
Volume 48

Vitrimer Resins

Baris Kumru Delft University of Technology, Netherlands and Vidyasirimedhi Institute of Science and Technology, Thailand
Niklas Lorenz Delft University of Technology, The Netherlands

Synopsis

This authoritative handbook offers a comprehensive overview of vitrimer chemistry, synthesis, characterization, and applications - bridging academic research and industrial practice. Aimed at researchers, engineers, and industry professionals, it offers a useful guide to the development of dynamic polymer materials and their role in a circular economy.

Key Features and Highlights

- Comprehensive vitrimer based topics from various aspects which are not covered in any other books.
- Introduces engineering and industry perspective on vitrimer systems and highlights the relevance of interdisciplinary to produce industrially relevant systems in near future.
- Establishes structure-property-synthesis-analysis-processing and manufacturing relation for better understanding of vitrimer technology.

Brief Contents

- Introduction
- Vitrimer Chemistry and Associated Challenges in Composite Applications
- Epoxy Vitrimers
- Benzoxazine Vitrimer Resins: From Synthesis to Applications
- Renewable Vitrimers
- Transition Phenomena in Vitrimers
- Theoretical Modelling of Vitrimers: Structural Evolution and Rheology
- Kinetic Modelling of Vitrimer Resin Processing
- Development of Composite Vitrimers
- On Vitrimer Coatings and Adhesives: Chemistry, Utilization, and Perspectives
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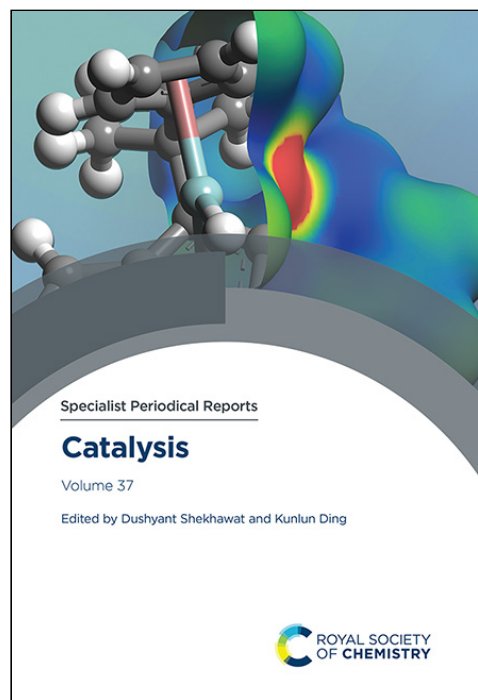
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Catalysis

Volume 37

Dushyant Shekhawat National Energy Technology Laboratory, USA

Kuntun Ding Louisiana State University, USA

Synopsis

This comprehensive edition serves as a vital reference for anyone seeking a succinct overview of current developments and future directions in catalysis. By bridging the gap between fundamental laboratory studies and practical industrial applications, the book provides invaluable insights into how catalytic processes are being leveraged for a more sustainable and efficient future. It is designed to benefit researchers eager to stay at the forefront of this dynamic area, both now and in the years to come.

Brief Contents

- Single-atom catalysts for selective hydrogenations
- Challenges in polyolefin re/upcycling catalysis specific to polymer feedstock
- Catalytic upcycling of plastic waste under electromagnetic fields
- Plasma catalysis for commodity chemical synthesis: progress, challenges, and future directions
- Non-reductive conversion of CO₂ into organic carbonate over ceria-based catalysts
- Recent advances in CO₂ hydrogenation to ethanol over supported metal and metal oxide catalysts
- Metal oxide sorbents for sorption enhanced reforming and gasification
- Aromatic alkylation on acidic zeolites: toward improved reactivity, stability and selectivity

Publisher: Royal Society of Chemistry
ISBN: HB 9781837073238
EPUB 9781837073245
PDF 9781837073221
Price: £314.95 | \$440.00 | €395.00
Publication Date: 30 September 2026
Target Audience: Professional and scholarly
Size: 234 x 156 (Royal 8vo) mm
Pages: 308
BIC: PNRD, PNN
THEMA: PNRD, PNN
BISAC: SCI013050, SCI013040
Series: Specialist Periodical Reports -
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