
Metal Organic Frameworks (MOFs), Covalent Organic Frameworks (COFs), and Porous Hybrid Materials: Characterization, Technology, Bio-Applications, and Emerging Devices 2 -and- Nonvolatile Memories and Artificial Neural Networks

Editors:

S. Shingubara	H. Shima
E. Redel	S. S. Nonnenmann
Y. Saito	
H. Baumgart	J. Rupp
J. G. Park	
G. Wittstock	G. Adam
G. Bersuker	
C. Woll	R. Dittmann
H. Kitagawa	Y. Yang
M. D. Allendorf	B. Magyari-Kope
P. Falcaro	K. Kobayashi

H05 Sponsoring Divisions:



Electronics and Photonics



Energy Technology



Organic and Biological Electrochemistry



Physical and Analytical Electrochemistry

The Japan Society of Applied Physics

H06 Sponsoring Divisions:



Dielectric Science and Technology



Electronics and Photonics

The Electrochemical Society of Japan

The Japan Society of Applied Physics



Published by

The Electrochemical Society

65 South Main Street, Building D
Pennington, NJ 08534-2839, USA

tel 609 737 1902

fax 609 737 2743

www.electrochem.org

ecsttransactions™

Vol. 98, No. 8

Copyright 2020 by The Electrochemical Society.
All rights reserved.

This book has been registered with Copyright Clearance Center.
For further information, please contact the Copyright Clearance Center,
Salem, Massachusetts.

Published by:

The Electrochemical Society
65 South Main Street
Pennington, New Jersey 08534-2839, USA

Telephone 609.737.1902

Fax 609.737.2743

e-mail: ecs@electrochem.org

Web: www.electrochem.org

ISSN 1938-6737 (online)

ISSN 1938-5862 (print)

ISBN 978-1-60768-903-4 (PDF)

Printed in the United States of America.

ECS Transactions, Volume 98, Issue 8

Metal Organic Frameworks (MOFs), Covalent Organic Frameworks (COFs), and Porous Hybrid Materials: Characterization, Technology, Bio-Applications, and Emerging Devices 2 - and- Nonvolatile Memories and Artificial Neural Networks

Table of Contents

Preface *iii*

Chapter 2

H05 – MOF Growth, Control, Design, and their Optical Properties

(Invited) The Interplay of Conformation and Electronic Structure in Metal Organic Frameworks 3

Y. Pramudya, M. Kozłowska, S. Heidrich, M. Krstić, R. Haldar, T. Neumann, T. Schlöder, Q. Zhang, F. Symalla, Z. M. Hassan, X. Liu, L. Heinke, C. Wöll, W. Wenzel

(Keynote) Conduction and Photoconduction in Fullerene- and Porphyrin-Containing Metal-Organic Framework Thin Films 15

L. Heinke

Chapter 3

H05 – Conductive Coordination Networks and their Electrocatalytic Properties

(Invited) Nanostructured Conjugated Materials in Metal-Organic Frameworks 23

T. Kitao, T. Uemura

Synthesis and Supercapacitive Properties of Ni/Co-S Derived from MOF-74 29

X. Pang, X. Gao, X. Li, J. Yu, Q. Zhang, L. Sui, L. Dong

Synthesis of Metal-Organic Framework-Derived Carbon Supported CoFe₂O₄ with Enhanced Oxygen Reduction Reaction Catalytic Properties 39

Z. Li, J. Sui, Q. Zhang, L. Yu, L. Dong

Chapter 4
H05 – Smart MOF Sensor Devices and Bio Applications

<i>(Keynote)</i> Electromagnetic Field Stimulated MOFs	47
<i>A. Knebel, D. Chen, B. Hosseinimonjezi, J. C. C. Santos, E. Redel, J. Caro, D. Volkmer, C. Wöll</i>	

Chapter 5
H06 – Low-Power and Organic Artificial Neurons

<i>(Invited)</i> 3D Neural Network: Monolithic Integration of Resistive-RAM Array with Oxide-Semiconductor FET	57
<i>M. Kobayashi, J. Wu, F. Mo, T. Saraya, T. Hiramoto</i>	

Chapter 6
H06 – Poster Session

First-Principles Study of Defect Levels Caused by Transition Metal Atoms in Silicon Nitride for Non-Volatile Memory Applications	65
<i>R. Agrawal, K. Kobayashi</i>	

Author Index	77
--------------	----