
Electrosynthesis of Fuels 5

Editors:

J. A. Staser	X.-D. Zhou
G. Brisard	T. Gur
J. Flake	M. Mogensen
W. Mustain	H. Xu

Sponsoring Divisions:

-  **Industrial Electrochemistry and Electrochemical Engineering**
-  **Energy Technology**
-  **High Temperature Materials**
-  **Organic and Biological Electrochemistry**
-  **Physical and Analytical Electrochemistry**



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

ecstransactions™

Vol. 85, No. 10

Copyright 2018 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)
ISSN 2151-2051 (cd-rom)

ISBN 978-1-62332-490-2 (CD-ROM)
ISBN 978-1-62332-503-9 (USB)
ISBN 978-1-60768-838-9 (PDF)

Printed in the United States of America.

ECS Transactions, Volume 85, Issue 10

Electrosynthesis of Fuels 5

Table of Contents

<i>Preface</i>	<i>iii</i>
Power-to-X with High Temperature Solid Oxide Cells: Concepts, Challenges & Prospects <i>R. Costa, F. Han, M. P. Hoerlein, M. Lang, N. Sata, G. Schiller, K. A. Friedrich</i>	1
Solid Oxide Electrolysis for Hydrogen Production: From Oxygen Ion to Proton Conducting Cells <i>B. Hu, A. N. Aphale, M. Reisert, S. Belko, O. A. Marina, J. W. Stevenson, P. Singh</i>	13
PBI-Blended Membrane Evaluated in High Temperature SO ₂ Electrolyzer <i>R. Peach, H. Krieg, A. Kruger, D. Bessarabov, J. A. Kerres</i>	21
(Invited) Electrochemical Pathways for Electrochemical Oxidation of Acetic Acid <i>X. Peng, T. Omasta, X. Zhao, W. E. Mustain</i>	29
Nickel Foam as a New Air Electrode Material to Enhance the Performance in Rechargeable Zn-Air Batteries <i>Q. Nie, N. Xu, X. Zhou, J. Qiao</i>	35
CO ₂ Electrochemical Reduction to Formate on Cu@Sn by Electrodeposition <i>X. Hou, J. Qiao</i>	41
Nanotube Heterostructures MoS ₂ /CdS/TiO ₂ for CO ₂ Conversion <i>K. Du, G. Liu, X. Chen, K. Wang</i>	47
Electrochemical Reduction of CO ₂ at Multi-Metallic Interfaces <i>S. Rasul, A. Pugnant, E. Yu</i>	57
Author Index	67