

---

# Interfaces and Interphases in Battery Systems

---

## Editors:

### **R. Kostecki**

Lawrence Berkeley National Laboratory  
Berkeley, California, USA

### **T. Abe**

Kyoto University  
Kyoto, Japan

### **B. Y. Liaw**

University of Hawaii at Mānoa  
Honolulu, Hawaii, USA

## Sponsoring Divisions:



**Battery**



**Energy Technology**



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](http://www.electrochem.org)

**ecs**transactions™

**Vol. 50, No. 1**

---

Copyright 2012 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](mailto:ecs@electrochem.org)  
Web: [www.electrochem.org](http://www.electrochem.org)

ISSN 1938-6737 (online)  
ISSN 1938-5862 (print)  
ISSN 2151-2051 (cd-rom)

ISBN 978-1-62332-000-3 (PDF)  
ISBN 978-1-60768-349-0 (Softcover)

Printed in the United States of America.

---

*ECS Transactions, Volume 50, Issue 1*  
Interfaces and Interphases in Battery Systems

**Table of Contents**

|   |            |
|---|------------|
| <i>Preface</i>  | <i>iii</i> |
| Lithium Depletion in the Solid Electrolyte Adjacent to Cathode Materials<br><i>H. Yamada, K. Suzuki, Y. Oga, I. Saruwatari, and I. Moriguchi</i>  | 1          |
| Real-Time Dynamics during Recharging Cycles<br><i>J. Keist, B. El Dasher, S. Torres, J. W. Evans, P. K. Wright, F. Ross, D. Steingart, and C. Orme</i>  | 13         |
| Ionic and Electronic Transport in Metal Fluoride Conversion Electrodes<br><i>F. Wang, H. Yu, A. Van Der Ven, K. Thornton, N. Pereira, Y. Zhu, G. G. Amatucci, and J. Graetz</i>   | 19         |
| Time-Dependent Determination of HF Formation in LiPF <sub>6</sub> -Containing Electrolytes in Different Cell Types by Spectroscopic Ellipsometry<br><i>S. F. Lux, I. T. Lucas, J. Chevalier, T. J. Richardson, and R. M. Kostecki</i> | 27         |
| In Situ Observation of Tin Negative Electrode / Electrolyte Interface by X-ray Reflectivity<br><i>K. Shimada, T. Kawaguchi, T. Ichitsubo, E. Matsubara, K. Fukuda, Y. Uchimoto, and Z. Ogumi</i>                                      | 31         |
| Ultrafast Laser Spectroscopy of Electrode/Electrolyte Interfaces<br><i>J. S. Syzdek, V. Zorba, X. Mao, R. E. Russo, and R. M. Kostecki</i>  | 39         |
| Analytical Studies of Flow Battery Redox Reaction Electrokinetics on a Thin Fiber Film Rotating Disk Electrode<br><i>K. L. Hawthorne, J. S. Wainright, and R. F. Savinell</i>   | 49         |
| Author Index  | 57         |