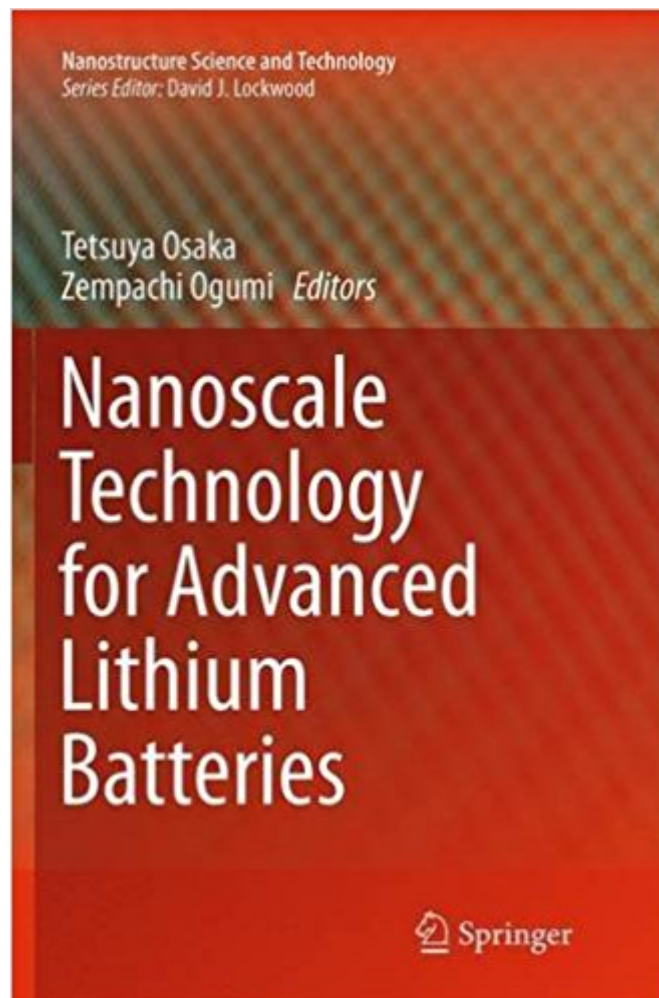




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Synopsis

The unfortunate and serious accident at the nuclear power plants in Fukushima, Japan caused by the earthquake and tsunami in March 2011 dealt Japan a serious blow. Japan was nearly deprived of electric power when in response to the accident all nuclear reactors in Japan were shut down. This shortage further accelerated the introduction of renewable energies. This book surveys the new materials and approaches needed to use nanotechnology to introduce the next generation of advanced lithium batteries, currently the most promising energy storage devices available. It provides an overview of nanotechnology for lithium batteries from basic to applied research in selected high technology areas. The book especially focuses on near-term and future advances in these fields. All contributors to this book are expert researchers on lithium batteries.

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The unfortunate and serious accident at the nuclear power plants in Fukushima, Japan caused by the earthquake and tsunami in March 2011 left Japan with a serious blow. Japan was deprived of electric power. This problem further accelerated the introduction of renewable energies. This book surveys the new materials and technologies needed to welcome the next generation of energy conversion and storage devices, such as lithium secondary batteries on the basis of nanotechnology. Most of the contributors for this book are from institutions researching lithium batteries. This book provides an overview of nanotechnology for lithium batteries from basic to applied research in selected high technology areas. The book especially focuses on near-term and

future advances in these fields.

Professor Tetsuya Osaka is a professor in the Department of Applied Chemistry, Waseda University, Tokyo, Japan - a position he has held since 1986. He has contributed as an author and/or editor of more than 70 books and published more than 890 original and review papers in these fields. He has been identified as one of the Highly Cited Researchers in the Materials Science category on the website of Thomson Scientific's ISI Highly Cited.com. Ogumi's technical contributions have been recognized by many awards including Medal with Purple Ribbon bestowed from the Decoration Bureau of the Cabinet Office, Japan. He received Research Award of the Electrodeposition Division of ECS in 1996 and was elected a Fellow of ECS (2002), IEEE (2002), IUPAC (2004) and ISE (2006). Professor Zempachi Ogumii is an Adjunct Professor of the Innovative Collaboration Center at Kyoto University, Kyoto, Japan. He graduated from Kyoto University in 1968 and received his Doctorate Degree from the Graduate School of Engineering, Kyoto University in 1974. After a short time in the industry, he became a research associate at the Fritz-Haber Institute of Max-Planck Foundation in Berlin from 1975 to 1976. In 1976, he joined Kyoto University and worked there until 1992 as a professor for the Graduate School of Engineering. In addition to teaching at Kyoto University, Ogumi is also a visiting professor of Waseda University and has published over 300 scientific papers on batteries, fuel cells, and electrolysis.

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