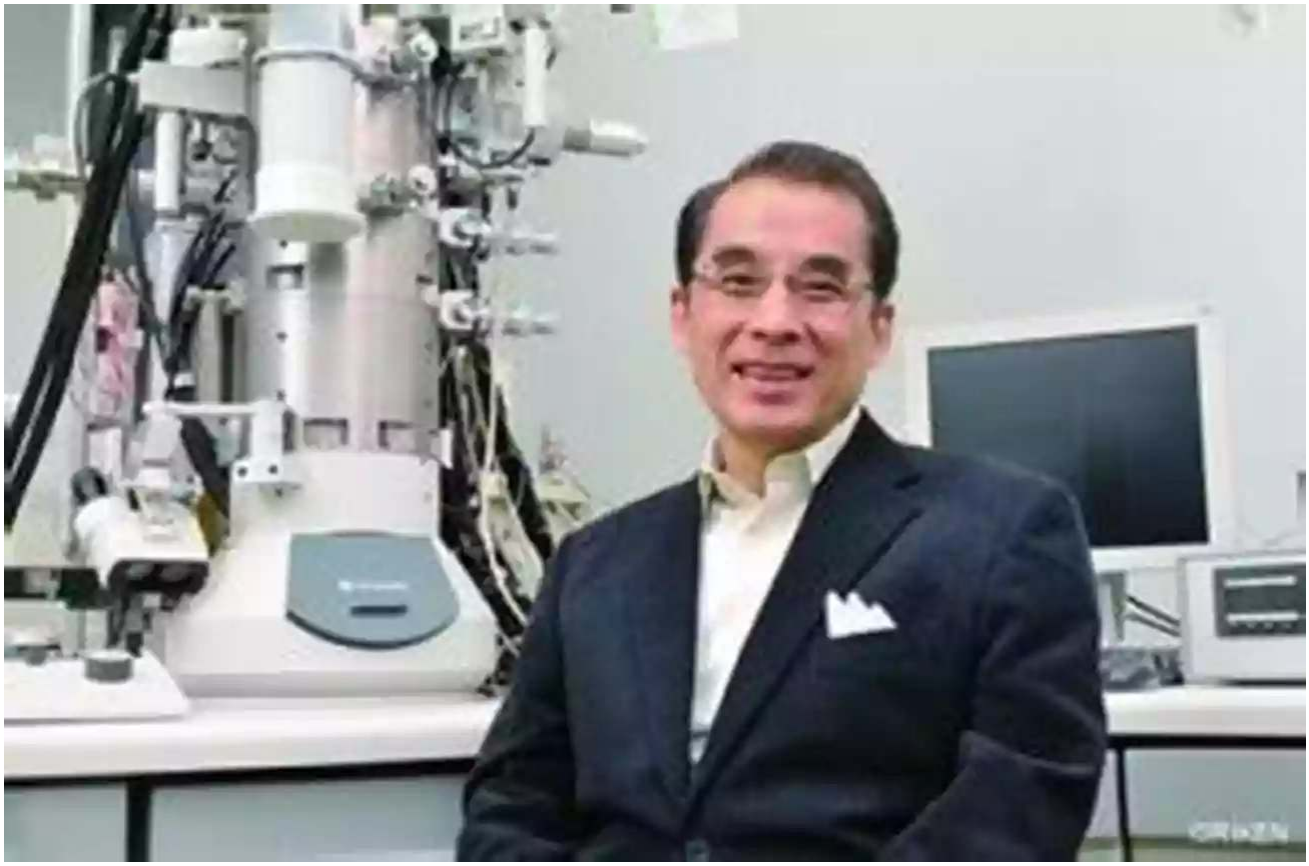
In Memory Of Akira Tonomura: A Pioneer in Electron Microscopy and Quantum Physics

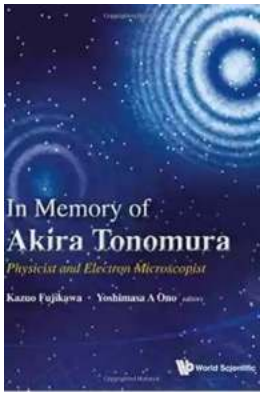


In the world of scientific discovery, there are individuals whose contributions leave an indelible mark in their respective fields. One such remarkable figure is Akira Tonomura – a visionary scientist who played a significant role in advancing electron microscopy and quantum physics. Discover his remarkable journey, pioneering innovations, and everlasting imprint on the realm of scientific exploration.

Akira Tonomura: A Brief

Born on October 31, 1942, in Osaka, Japan, Akira Tonomura possessed an insatiable curiosity about the fundamental workings of the universe from an early

age. This burning desire to unravel the mysteries of nature paved the way for his illustrious career in the field of experimental physics.



In Memory Of Akira Tonomura: Physicist And Electron Microscopist (With Dvd-rom)

by Angela Kallhoff(Pck Har/CD Edition, Kindle Edition)

4.6 out of 5

Language	: English
File size	: 19138 KB
Text-to-Speech	: Enabled
Screen Reader	: Supported
Enhanced typesetting	: Enabled
Print length	: 327 pages

Tonomura's pioneering work in the development of the electron microscope revolutionized the field of microscopy. He played an instrumental role in refining the technique of electron holography, allowing scientists to capture stunningly intricate images with atomic-level precision. This breakthrough opened up new avenues in the exploration of nanoscale materials and structures.

Pushing the Boundaries of Electron Microscopy

Tonomura's groundbreaking experiments and innovations propelled electron microscopy to new heights. His notable achievements include the direct observation of magnetic fields within materials at the nanoscale level and the demonstration of electron interference phenomena.

One of Tonomura's most significant contributions was the development of the Tonomura-Tsukada interference microscope, which allowed researchers to visualize the wave nature of electrons. This remarkable invention provided

compelling evidence for the wave-particle duality theory, a fundamental concept in quantum physics.

Exploring Quantum Behavior

Parallel to his advancements in electron microscopy, Tonomura made remarkable strides in the field of quantum physics. His work focused on elucidating the principles of quantum mechanics by exploring the behavior of particles at the atomic and subatomic levels.

Tonomura's experiments with electron interference and diffraction revealed intricate patterns that could only be explained by the wave-like nature of particles. His methodical investigations paved the way for further research in quantum mechanics and contributed to the development of vital technologies such as electron-beam lithography.

Legacy and Impact

Akira Tonomura's relentless pursuit of scientific discovery and his groundbreaking contributions have left an indelible mark on the world of physics. His innovative techniques in electron microscopy have enabled scientists to explore the previously uncharted realms of nanoscale materials and structures.

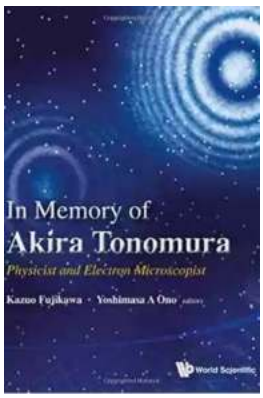
Furthermore, Tonomura's insights into quantum behavior have shaped our understanding of the microscopic world and provided a solid foundation for future investigations. His pioneering achievements continue to inspire and fuel the curiosity of young scientists around the globe.

Despite his untimely demise on May 2, 2012, Akira Tonomura's legacy lives on through his influential research and remarkable achievements. His unwavering

dedication to expanding the frontiers of scientific knowledge has forever changed the landscape of electron microscopy and quantum physics.

Akira Tonomura's contributions to the fields of electron microscopy and quantum physics cannot be overstated. His relentless pursuit of knowledge and groundbreaking innovations have propelled scientific research to unprecedented heights.

As we remember and honor his remarkable legacy, it is vital to recognize the impact he had on shaping our understanding of the microscopic world. Tonomura's unwavering curiosity and passion for unraveling the secrets of nature will continue to inspire generations of scientists to come.



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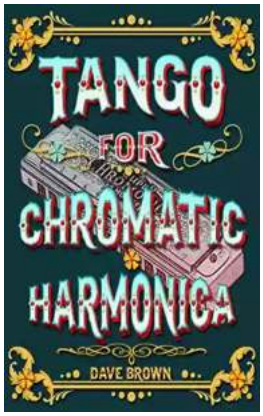
This memorial volume in honor of Dr Akira Tonomura is to commemorate his enormous contributions to fundamental physics in addition to the basic technology of electron microscopy. Dr Tonomura passed away on May 2, 2012 at the age of 70. He was Fellow of Hitachi, Ltd., Group Director of Single Quantum Dynamics Research Group of RIKEN, Principal Investigator of the FIRST

Tonomura Project, and Professor of Okinawa Institute of Science and Technology Graduate University.The book consists of: 1) contributions from distinguished physicists, who participated in the “Tonomura FIRST International Symposium on Electron Microscopy and Gauge Fields” planned by Tonomura himself and held in Tokyo on May 9-10, 2012, and 2) reprints of key papers by Tonomura and his team. Invited speakers at this Symposium include Chen Ning Yang and other distinguished physicists such as Yakir Aharonov, Gordon Baym, Christian Colliex, Anthony J Leggett, Naoto Nagaosa, Nobuyuki Osakabe and Masahito Ueda. This “memorial” Symposium was originally planned to commemorate the start of the Japanese-government-sponsored FIRST Tonomura Project to construct the 1.2 MV holography electron microscope capable of observing quantum phenomena in the microscopic world. In addition, the book includes contributions from participants of the past ISQM-Tokyo symposia held at Hitachi and from Tonomura's longtime friends, including Michael Berry, Jerome Friedman, Hidetoshi Fukuyama, Joseph Imry, Yoshinori Tokura, Jaw-Shen Tsai, and Anton Zeilinger.The co-editors are Kazuo Fujikawa, Tonomura's longtime friend, and Yoshimasa A Ono who is Tonomura's associate at Hitachi Advanced Research Laboratory and now in the FIRST Tonomura Project.



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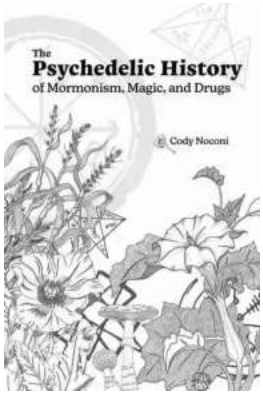

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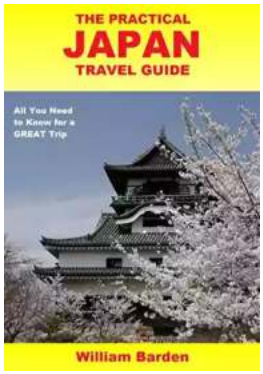

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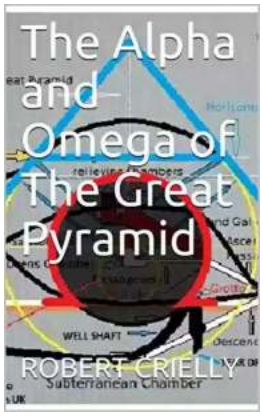

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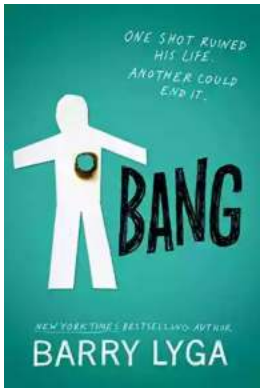

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