

CHEMICAL HERITAGE FOUNDATION

**ESTHER S. TAKEUCHI**

Transcript of an Interview  
Conducted by

David J. Caruso and Matthew N. Eisler

at

University at Buffalo, The State University of New York  
and The State University of New York at Stony Brook  
on

27 April and 14 September 2012

(With Subsequent Corrections and Additions)

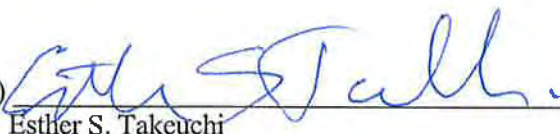
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## ESTHER SANS TAKEUCHI

1953 Born in Kansas City, Missouri, on 8 September

### Education

1975 BA, Chemistry and History, University of Pennsylvania

1981 PhD, Organic Chemistry, The Ohio State University

### Professional Experience

1975-1976 University of Pennsylvania, Philadelphia, Pennsylvania  
Research Assistant

1981-1982 Union Carbide Corporation, South Charleston, West Virginia  
Senior Research Chemist, Corporate Research Center

1982-1983 University of North Carolina, Chapel Hill  
Postdoctoral Research Associate, Electrochemistry

1983-1984 University at Buffalo, The State University of New York  
Postdoctoral Research Associate, Electrochemistry

1984-1986 Wilson Greatbatch, Inc., Clarence, New York  
Senior Chemist

1986-1990 Research and Development Group Manager

1990-1991 Research and Development Associate Director

1991-1999 Director of Electrochemical Research

1999-2006 Executive Director, Battery Research & Development and Center  
of Excellence

2006-2007 Chief Scientist, Center of Excellence

2007-2010 University at Buffalo, The State University of New York  
Greatbatch Professor, Chemical and Biological Engineering,  
Electrical Engineering, and Chemistry  
Co-Director of NYSTAR Center for Advanced Technology in  
Bioinformatics and Biomedicine

2010-2012 SUNY Distinguished Professor

2012-present State University of New York at Stony Brook  
Distinguished Professor of Chemistry and Materials Science and  
Engineering

2012-present Brookhaven National Laboratory  
Chief Scientist, Energy Sciences Directorate

#### Awards and Honors

1990 Woman of the Year, Science category, Presented by Community  
Advisory Council, State University of New York at Buffalo  
1995 Battery Division Technology Award, Electrochemical Society  
1997 Visionary of the Year, Wilson Greatbatch Ltd.  
1998 68th Jacob F. Schoellkopf Medal, Western New York Section of the  
American Chemical Society  
1998 Inducted into the Western New York Women's Hall of Fame  
1999 Fellow of the American Institute for Medical and Biological Engineering  
2000 Inventor of the Year Award, Physical Sciences, 1<sup>st</sup> and 3<sup>rd</sup> place recipient,  
presented by The Technical Societies Council of the Niagara Frontier  
and The Niagara Frontier Intellectual Property Law Association  
2002 YWCA Executive Award Nominee  
2002, 2003 Buffalo Niagara ATHENA Award Nominee  
2003 Woman of Distinction Award, Buffalo Branch of the American  
Association of University Women  
2003 Achievement in Health Care Award, D'Youville College  
2004 Pioneers of Science Award, Hauptman-Woodward Medical Research  
Institute  
2004 Elected into the National Academy of Engineering  
2005 Inventor of the Year Award, Physical Sciences, 3<sup>rd</sup> place recipient,  
Presented by The Technical Societies Council of the Niagara Frontier  
and The Niagara Frontier Intellectual Property Law Association  
2006 Lincoln Gries Distinguished Alumni Award, Old Trail School  
2007 Life Time Achievement Award, The Technical Societies Council of the  
Niagara Frontier and The Niagara Frontier Intellectual Property Law  
2008 Astellas USA Foundation Award, Administered by the American  
Chemical Society on behalf of the Astellas Foundation  
2009 National Medal of Technology and Innovation  
2010 Chancellor Charles P. Norton Medal, State University of New York at  
Buffalo  
2011 National Inventors Hall of Fame  
2013 E.V. Murphree Award in Industrial and Engineering Chemistry,  
American Chemical Society  
2013 Charter member, National Academy of Innovation

## ABSTRACT

Esther Takeuchi grew up in Akron, Ohio, the youngest of three children. After escaping Soviet Latvia, her father became an electrical engineer for Goodyear Aerospace and her mother a home health worker who also had an economics degree. From an early age, Takeuchi enjoyed science and math. She majored in history and chemistry at the University of Pennsylvania, where she was often the lone woman in her classes.

Takeuchi completed her PhD in Harold Shechter's lab at the Ohio State University. She also met her future husband, an inorganic chemist, in a German class at Ohio State. Preferring to "make things rather than measure them," Takeuchi chose industry over academia, taking a job at Union Carbide Corporation (UCC), working on catalysis. She did postdoctoral work at the University of North Carolina, and, when her husband took a job at SUNY Buffalo, she did another postdoc at Buffalo. Still interested in a career in industry, Takeuchi accepted a position as senior chemist at Greatbatch, Inc., a developer of implantable medical devices. She rediscovered the use of silver vanadium oxide (SVO) in oil-drilling batteries and adapted the chemistry for an implantable cardiac defibrillator. During her twenty-three years at Greatbatch, Takeuchi rose up in management positions, culminating in Chief Scientist at the Center for Excellence. From there she went to SUNY Buffalo, becoming Greatbatch Professor of Chemical and Biological Engineering, Electrical Engineering, and Chemistry. While there, she was awarded the National Medal of Technology and Innovation. Takeuchi's interest in battery development extended into energy storage, so she moved to SUNY Stony Brook, where she is the Distinguished Professor of Chemistry and Materials Science and Engineering in a joint appointment with Brookhaven National Laboratory, to work on large projects with large groups.

Takeuchi has won numerous awards and holds numerous patents. She has published articles and given presentations at Electrochemical Society meetings. Her experience in both industry and academia has given her an unusually broad perspective into the practice of chemistry.

## INTERVIEWERS

David J. Caruso earned a BA in the history of science, medicine, and technology from Johns Hopkins University in 2001 and a PhD in science and technology studies from Cornell University in 2008. Caruso is the director of the Chemical Heritage Foundation's (CHF) Center for Oral History, president of Oral History in the Mid-Atlantic Region, and the book review editor for the *Oral History Review*. In addition to overseeing all oral history research at CHF, he also holds an annual training institute that focuses on conducting interviews with scientists and engineers, he consults on various oral history projects, like at the San Diego Technology Archives, and is adjunct faculty at the University of Pennsylvania, teaching courses on the history of military medicine and technology and on oral history. His current research interests are the discipline formation of biomedical science in 20th-century America and the organizational structures that have contributed to such formation.

Matthew N. Eisler is the Strathclyde Chancellor's Fellow and Lecturer at Strathclyde University. He was a lecturer at the University of Virginia's Department of Engineering and Society where he studied the relationship between ideology and material practices of science and engineering. He holds a BA, MA, and PhD from the University of Alberta in the history of science and technology. He was also a postdoctoral fellow at Western University, University of California at Santa Barbara, and the Chemical Heritage Foundation. He is the author of *Overpotential: Fuel Cells, Futurism, and the Making of a Power Panacea* (2012).

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