

**Institute for Research & Education on Women & Gender  
A UB "Gender Week 2005" event**

The Gender Institute  
School of Engineering and Applied Sciences  
School of Medicine and Biomedical Sciences  
College of Arts and Sciences  
Women Full Professors  
Association for Women in Science, Buffalo Chapter and  
Society of Women Engineering

**Guest Speaker**

**Dr. Esther Takeuchi**

**"The Bionic Human:  
Medical Devices and How They are Powered"**

**Friday, September 23, 2005**

**3:30-4:30 PM**

**The Screening Room, Center for the Arts  
Reception to follow in CFA Atrium**

**Abstract**

The year 2005 marks the thirty-third anniversary of the first human implant of a lithium battery; a lithium/iodine cell which powered an implantable cardiac pacemaker. Since that time several battery types have been developed and used successfully in a diverse set of implantable medical devices, including pacemakers, neurostimulators, drug pumps, implantable cardiac defibrillators (ICDs), and heart assist/replacement devices. The cells used in these devices vary, but there are general requirements that remain constant for all the cells, including: safety, reliability, low weight/small size, predictability of performance, low self discharge and end-of-life indication. These parameters along with key device performance factors will be discussed.

**Biography**

Esther S. Takeuchi is the Executive Director of Battery Research and Development and two Centers of Excellence at Greatbatch, Inc. Since joining Greatbatch, Dr. Takeuchi has been active in lithium battery research, particularly, on cells for implantable applications. A main focus has been the development of power sources for implantable cardiac defibrillators. Her honors include the Jacob F. Schoellkopf Award given by the WNY American Chemical Society for creative research in batteries for medical applications, the Battery Division of the Electrochemical Society Technology Award for development of lithium/silver vanadium oxide batteries, the Community Advisory Council of the State University at Buffalo for outstanding achievement in science, Woman of Distinction, as recognized by the American Association of University Women, the Achievement in Healthcare Award presented by D'Youville College. She is a Fellow of the American Institute for Medical and Biological Engineering, was inducted into the WNY Women's Hall of Fame, and is an inventor on over 100 patents. In 2004, she was inducted into the National Academy of Engineering. Prior to joining Greatbatch, Dr. Takeuchi received a Bachelor's degree from the University of Pennsylvania with a double major in chemistry and history and completed a PhD in chemistry at the Ohio State University. She also completed Post-Doctoral work at the University of North Carolina and the State University of New York at Buffalo.