The School of Packaging engages in a variety of research activities, supported by funds from government, industry, and other organizations. Much of this research is reflected in the research areas discussed in the section on the graduate programs, and in the listing of theses and dissertations. An additional overview of research is presented in this section.

Funding for research and testing comes from a variety of companies and agencies, as illustrated in the following listing:

**List of Companies and Agencies that Provided Research Funding and Technical Support Funding to the Faculty of the School of Packaging (2000-2009)**

**COMPANIES**

Abbott  
Access Business Group  
Astra Zeneca  
Atlanta Nisseki Claf, Inc.  
Atlas Roofing Corporation  
Bausch & Lomb  
Bemis Company  
Boston Scientific  
Bruno Rimini Corp.  
BTD Manufacturing, Inc.  
Canberra  
Cardinal Medical Health Products  
Cargill Dow Polymers  
Clorox Company  
Coca Cola  
Comet Cream Corporation  
ConAgra Foods  
Diageo  
Dupont de Nemours  
Edwards Lifesciences  
Electrolux Home Products  
Eli Lilly Corporation  
E-Saeng Company  
Federal Express  
Fibre Box Association  
Filmco, Inc.  
Gateway Packaging Company  
General Mills  
Hilex Poly  
Honeywell Specialty Films  
Interchem Corporation  
International Packaging Company  
International Packaging Company  
Johnson & Johnson  
Johnsonville foods  
Kellogg Company  
Kraft Foods Global  
Land O Lakes  
M&M Mars, Inc.  
Mead Westvaco  
Monsanto Company  
Morris Packaging  
National Starch and Chemical  
Oblon-Spivak-McClelland Maier  
Outlook Group  
Packing & Technology Integrated Solutions  
Pakit, Inc.  
Perfecseal  
Pfizer Pharmaceuticals  
Pliant Corporation  
Prestige Brands, Inc.  
Profowers.com  
QLM Consulting  
QVC, Inc.  
Ricetec, Inc.  
SC Johnson  
Sealed Air Corporation  
Seatac Packaging Mfg.  
Stora Enso North America  
Temple-Inland, Inc.  
Trinity Packaging  
Weaver Popcorn  
Wrigley Company  
York Partners, LLC  
Watson Foods

**AGENCIES**

Chestnut Growers, Inc.  
Environmental Protection Agency  
Farmers Rice Cooperative  
Federal Aviation Authority
The following listings illustrate the variety of research activities carried out by our faculty and graduate students, and some of the results of that research in the form of patents, presentations and publications. Please be advised that the list is not totally complete.

### Patents and Patents Pending


**Books, 1990-2009**


**Book Chapters, 1990-2009**

**2009**


**2008**


**2007**


**2006**


2005


2004


2003


2002


2001

2000


1999


1997


1996


1994


1991


1990


2009


2008


2007


2006


Auras, R., Bix, L. WAKE UP! The Effectiveness of Student Response System in Large Packaging Classes. Packaging Technology & Science, available online, 2006.


2005


2004


2003


2002


2001


2000


**Conference Papers and Posters, 2000-2009**

**2009**

Almenar, E. Application of Poly(lactic acid) to Fresh Produce Packaging. Conference of Food Engineering (CoFE 2009), OH, USA, April 8, 2009.


2008


Harte, B. and Selke, S. Michigan State University Comes to Dubai. Published in the proceedings of the 16th IAPRI World Conference, Bangkok Thailand, 2008.


2007


2006


Arroyo, B., Auras, R., Selke, S. Production and Properties of Cassava-starch-glycerol-beeswax Edible Films. IAPRI 2006, Tokyo, Japan, October 5 - 8, 2006 / Western Michigan University, Barrier Coating Symposium, Kalamazoo, MI, October 11 - 12, 2006.

Auras, R. and Bix, L. Broader Implications of Using New Technologies in Packaging Classes: How Inclusive is Your Classroom? The 15th World Conference on Packaging of the International Association of Packaging Research Institutes (IAPRI), Tokyo, Japan, October 2 - 5, 2006.


de la Fuente, J. and Bix, L. A Universal Design Process for Developing Child Resistant Packaging. The 15th World Conference on Packaging of the International Association of Packaging Research Institutes (IAPRI), Tokyo, Japan. October 2 - 5, 2006.


Gulati, N., Auras, R., Rubino, M. Analysis of Water Vapor Sorption on Poly(lactide) Using a Quartz Crystal Microbalance. IAPRI 2006, Tokio, Japan, October 5 - 8, 2006 / Western Michigan University, Barrier Coating Symposium, Kalamazoo, MI, October 11 - 12, 2006.


Kou, E. and Bix, L. Can People with Arthritis Access Their Medications? The 15th World Conference on Packaging of the International Association of Packaging Research Institutes (IAPRI), Tokyo, Japan, October 2-5, 2006.


Kumar, P., Auras, R., Rubino, M., Harte, J., Risch, S. Effect of Packaging Configuration on Flavor Retention and Sensory. IAPRI 2006, Tokyo, Japan, October 5 - 8, 2006; Western Michigan University, Barrier Coating Symposium, Kalamazoo, MI, October 11 - 12, 2006.


Madival, S., Auras, R., Singh, S.P. Packaging Sustainability: Live Cycle Assessment of PLA, PET and PS Containers. IAPRI 2006, Tokyo, Japan, October 5 - 8, 2006 / Western Michigan University, Barrier Coating Symposium, Kalamazoo, MI, October 11 - 12, 2006.


2005


Auras, R., Harte, B., Selke, S.  Polylactides, a New Era of Biodegradable Polymers for Packaging Application.  ANTEC=05, Boston, MA, May 1 - 5, 2005.


Clarke, R.H.  MSU RFID Experimentation.  Institute of Packaging Professionals Joint Chapter Meeting, East Lansing, MI, April, 2005.

Clarke, R.H.  Overcoming The Challenges of Transforming RF Technology into a Practical Packaging Technology.  PharmaIQ Workshop, King of Prussia, PA, April, 2005.


Clarke, R.H.  The Challenges of Transforming RFID Technology into a Practical Packaging Technology.  Forum for Innovation, Cap Tech/Induniv, San Juan, PR, April, 2005.


Singh, S.P. and Singh, J. Pictorial Markings for Packaging to Prevent Damage and Liability. IAPRI Conference, Sao Paulo, Brazil, 2005.


2004


Clarke, R.H. Temple Inland RFID Update. Inland RFID Corporate Strategy Meeting, Austin, TX, April, 2004.


2003


Hughes, H.A.  Needed Changes in Content and Modes of Presentation for Packaging Education in the Next Half Century, 2002


2001


Clarke, R.H. Automatic Identification: The Update, Center for Food and Pharmaceutical Packaging Research, MSU School of Packaging, 2001.


Siripatrawan, U., Linz, J. Harte, B.  Use of the Enose to Quantify E. Coli in Packaged Alfalfa Sprouts.  Published in the proceedings of the 12th IAPRI Conference in Warsaw, Poland, 2001.

2000


Selke, S.  Produce.  TRANSPAK 2000, Institute of Packaging Professionals, Austin, TX, Feb, 2000.

Singh, P.  Design Requirements for RPC’s for Fresh Produce.  UNITED 2000, United Fresh Fruit and Vegetable Conference, Phoenix, AZ, Feb, 2000.

