

PURDUE MECHANICAL ENGINEERING



The Hawkins Memorial Heat Transfer Seminar

Dr. Cynthia Hipwell

*Texas A&M Engineering and Experiment Station Eminent Professor
Texas A&M University*

*Friday, October 11, 2019
10:30 am ME, Room 2054*

Heat Assisted Magnetic Recording Development: A Nanoscale Heat Transfer Adventurer

Abstract:

Aggressive areal density growth has been the business driver for the hard disk drive industry. The industry has lived in the shadow of the superparamagnetic limit for three decades and has prevailed through rapid development and integration technologies at the bleeding edge: giant magneto resistance, antiferromagnetic coupling, and microelectromechanical systems. Most recently, heat assisted magnetic recording (HAMR) has been developed, using plasmonics and nanoscale heat transfer phenomena to produce bit sizes less than 50 nm and areal densities measured in terabits per square inch. Dr. Hipwell will discuss the technology drivers leading to the need for heat assisted magnetic recording and the nanoscale heat transfer and materials challenges that needed to be overcome to achieve performance and reliability feasibility targets for this radically new recording technology.

Biography:

Dr. Hipwell has been working in the area of technology development based upon nanoscale phenomena for over 20 years. She received her B.S.M.E. from Rice University and her M.S. and Ph.D. in Mechanical Engineering from the University of California, Berkeley. Upon graduation, she went to work at Seagate Technology's Recording Head Division in Bloomington, Minnesota to develop test equipment to characterize the interface between the head and the disk in hard disk drives. During her time at Seagate, Dr. Hipwell held various individual and leadership positions in the areas of reliability, product development, and advanced mechanical and electrical technology development. In these various roles, she established new business processes and an organizational culture that focused on developing innovative solutions from root cause understanding, improved pace of learning, and discipline in experimentation and configuration management. She was inducted into the National Academy of Engineering in 2016 for her leadership in the development of technologies to enable areal density and reliability increases in hard disk drives and was recently elected a National Academy of Inventors Fellow. Dr. Hipwell is currently a Texas A&M Engineering and Experiment Station Eminent Professor at Texas A&M University, teaching classes on innovation and technology development as well as leading the INVENT Lab (INnoVation tools and Entrepreneurial Nano Technology).

Reception @ 10:00 a.m. – 10:20 a.m. — Room 2052, Mechanical Engineering Building