

## Selected Publications

### Nanotribology

"Molecular Basis of Lubrication," Hsu, S. M., Tribology International, vol.37, 7, 553-559, 2004.

"Nanolubrication: concept and design," Hsu, S. M., Tribology International, vol. 37, 7, 537-545, 2004.

"Nano-lubrication: principle and design," S. M. Hsu, chapter in the book: "Nanotribology: critical assessment and research directions", edited by S. M. Hsu, Z. C. Ying, Kluwer Academic Press, New York, 2002.

"The nature and origin of tribochemistry," S. M. Hsu, J. Zhang, Z. F. Yin, Tribology Letters, 13, 2, 131-139, 2002.

"Scaling Issues in the Measurement of Monolayer Films," S. M. Hsu, P. M. McGuiggan, J. Zhang, Y. Wang, F. Yin, Y. P. Yeh, and R. S. Gates, **invited chapter**, in 'Micro- Nano-Tribology' NATO ASI series, edited by Bharat Bhushan, Kluwer Academic Publishers, Netherlands, p.691-710, 2001.

"Comparison of Friction Measurements using the Atomic force Microscope and the Surface Forces Apparatus: The Issue of Scale" P. M. McGuiggan, J. Zhang, S. M. Hsu, Tribology Letters, vol. 10, no. 4, 217-223 (2001).

"Accelerated Wear Test Method to evaluate Lubricant thin films on magnetic hard disks," X. H. Zhang, R. S. Gates, S. Anders, S. M. Hsu, Tribology Letters, 11, (1), 15-21, 2001.

"Lubrication: Traditional to Nano-scale Films," **Invited chapter**, S. M. Hsu and Ken Zhang, in 'Micro/Nanotribology and its Applications' Edited by B. Bhushan, p. 399-414, Kluwer Academic Publishers, 1997.

### Wear of materials

"Wear Prediction of Ceramics," Invited paper, Hsu, S.M, and Shen, M., Wear 256. 867-878, 2004.

"Generation of Narrowly Distributed Ultra-High Molecular Weight Polyethylene Particles by Surface Texturing Techniques," Fang, H.-W., Hsu, S.M., and Sengers, J.V., J of Biomedical Materials Research., vol. 67B, 741-749, 2003.

"Surface Texture design to generate specific sizes and shapes of UHMWPE wear particles," Mat.-wiss. u. Werkstofftech., 34, no. 10/11, 976-988, 2003.

"A chemical kinetic model to predict lubricant performance in a diesel engine. Part I: simulation methodology," Chun-I Chan, S. M. Hsu, Tribology Letters, vol. 14, no. 2, 83-90, 2003.

"A chemical kinetic model to predict diesel engine performance. Part II. Bench test procedures," S. M. Hsu, Chun-I Chan, Tribology Letters, vol. 14, no. 2, 91-97, 2003.

"The nature and origin of tribochemistry," S. M. Hsu, J. Zhang, Z. F. Yin, Tribology Letters, 13, 2, 131-139, 2002.

"Wear in Boundary Lubrication," S. M. Hsu, R. Munro, M. Shen, **invited paper** in the Journal of Engineering Tribology, IMechE, vol 216 Part J, 427-441, 2002 .

"Predictive Wear of Metals," **Invited paper**, S. M. Hsu, M. C. Shen, A. W. Ruff, *Tribology International*, **30**, 5, 377-383 (1997).

**Books edited:**

1. "Lubrication Technology for Advanced Engines: An Assessment of Industrial Needs," S. M. Hsu and M. Peterson, CRTD-Vol. 26, ASME, New York, 90 pages, 1993. (Cited 2 times)
2. "Nanotribology: critical assessment and research directions", edited by S. M. Hsu, Z. C. Ying, Kluwer Academic Press, New York, 2002.

Talks

300. S. M. Hsu, " Designer Surfaces to improve fuel economy and durability," DOE program coordinating meeting, NIST, March 11, 2003.
- 301 S. M. Hsu, "Scaling issues in Nanofriction measurement," invited speaker, ACS Annual meeting, Molecular Tribology Symposium, New Orleans, March 23-27, 2003.
302. S. M. Hsu, "Wear mapping for coatings," Invited speaker, ICMCTF Conference, San Diego, CA, April 27-May 2, 2003.
303. S. M. Hsu, "Diesel engine performance prediction and modeling," Invited talk, Caterpillar Co. R&D center, Peoria, IL, May 7, 2003.
304. S. M. Hsu, "Nanofriction measurement: the issue of scale," invited talk, NIST Nano workshop, NIST, June 2-4, 2003.
305. S. M. Hsu, "Nanolubrication research for magnetic hard disk," INSIC annual meeting, Monterey, CA., June 24-26, 2003.
- 306 S. M. Hsu, "Boundary lubricating films: What they are, how they are formed, and how they work," Invited speaker, Engineering Foundation Conference on Boundary Lubrication, Copper Mountain, Colorado, Aug. 4-8, 2003.
- 307 S. M. Hsu, "Concepts for metal-free, sulfur-free, and phosphorus-free diesel lubricants," invited talk, Shell Research Center, West Hollow, Houston, Texas, Aug. 11, 2003.
308. S. M. Hsu, "Surface texturing as a means to control friction," DOE coordinating meeting, Washington DC, Aug. 20, 2003.
309. S. M. Hsu, Richard Gates, "The protective mechanism of diamond surface by alcohols," invited speaker, NSF workshop in High Pressure Phase Transformation of Silicon, Charlotte, NC Aug. 20-22, 2003.
310. S. M. Hsu, "An integrated surface texture design with surface modification techniques and thin lubricating films," Smart Surfaces in Tribology: Advanced additives and structured coatings Conference, Zurich, Switzerland, Sept. 10-12, 2003.
311. S. M. Hsu, Z. Y. Ying, "Measurement issues at the nanoscale: adhesion and friction," Invited speaker, Frontiers of NanoEngineering 2003, Campinas, Brazil, Oct. 2-4, 2003.
312. S. M. Hsu, "Nanoscale measurements: artifacts or reality," Invited Lecturer, Short Course, Frontiers of NanoEngineering 2003, Campinas, Brazil, Oct. 1, 2003.
313. S. M. Hsu, "Nanotechnology: current reality and future opportunities," Invited Panelist, Frontiers of NanoEngineering 2003, Campinas, Brazil, Oct. 2-4, 2003.

314. S. M. Hsu, "An integrated surface technology international program under IEA" International Energy Agency Executive Committee meeting, Oakland, CA., Oct. 20-23, 2003.
315. S. M. Hsu, "An integrated approach to design intelligent surfaces for heavily loaded contacts," International Joint Tribology Conference, Ponte Vedra, FL., Oct. 27-29, 2003.
316. S. M. Hsu, H. W. Fang, "Surface texturing to produce specific size and shape of UHMWPE particles for bioactivity testing," International Joint Tribology Conference, Ponte Vedra, FL., Oct. 27-29, 2003.
317. B. Bhushan, H. Liu, S. M. Hsu, "Adhesion and friction studies of silicon and hydrophobic and low friction films and investigation of scale effects," International Joint Tribology Conference, Ponte Vedra, FL., Oct. 27-29, 2003.
318. S. M. Hsu, "A novel surface texture design for heavily loaded contacts," DOE program managers meeting, DOE headquarters, Washington DC, Feb. 13, 2003.
319. S. M. Hsu, "Boundary Lubricating films: what are they, How they are formed, How they work, & New approaches to Better films," **Keynote Speech**, F&L Asia Conference, Shanghai, China, March 3-5, 2004.
320. S. M. Hsu, "Nanolubrication: basic principles," Invited Panelist in Frontiers of fundamental research in lubrication science, STLE annual meeting, Toronto, Canada, May 17-20, 2004.
321. S. M. Hsu, Richard Gates, "Tribocchemistry between water and silicon nitride and silicon carbide: an induction time analysis," Mike Gardo's Memorial Symposium, STLE annual meeting, Toronto, Canada, May 17-20, 2004.
322. S. M. Hsu, Z. C. Ying, "Nanofriction: scaling artifacts." STLE annual meeting, Toronto, Canada, May 17-20, 2004.
323. S. M. Hsu, "Surface texturing under boundary lubrication for friction control," STLE annual meeting, Toronto, Canada, May 17-20, 2004.
324. S. M. Hsu, "Nanolubrication: Measurement techniques," STLE annual meeting, Toronto, Canada, May 17-20, 2004.
325. S. M. Hsu, "Nanomechanics: Theory and reality of measurements," invited speaker, Veeco R&D Center, Santa Barbara, CA, June 25, 2004.
326. S. M. Hsu, "Nanotribology research issues and progress," Invited Graduate Seminar speaker,