

**Steven M. Kurtz, Ph.D.**  
**Corporate Vice President and Director, Philadelphia Office**

**Professional Profile**

Dr. Steven M. Kurtz is a Corporate Vice President and Director of Exponent's Philadelphia, Pennsylvania office. Concurrently, he serves as a part-time Research Professor and director of the Implant Research Center at Drexel University's School of Biomedical Engineering, Science, and Health Systems. Dr. Kurtz' professional career has involved the evaluation of medical device technologies, from a combined analytical, experimental, and clinical perspective. His research activities have emphasized real-world clinical performance of medical devices, including orthopedic, spine, and cardiovascular implants, as assessed by human implant retrieval specimens and national health care databases; mechanical behavior of synthetic biomaterials; contact mechanics of artificial joints; and structural evaluation of bone-implant systems. Dr. Kurtz is active in many professional societies, including the American Academy of Orthopedic Surgeons, the Spine Arthroplasty Society, and the American Society for Testing and Materials. Dr. Kurtz has edited four books and written over 110 journal articles and 300 conference abstracts. He is the founding editor of two educational websites: the UHMWPE Lexicon ([www.uhmwpe.org](http://www.uhmwpe.org)) and the Medical PEEK Lexicon ([www.medicalpeek.org](http://www.medicalpeek.org)). He has recently completed the 2<sup>nd</sup> Edition of the UHMWPE Biomaterials Handbook.

**Academic Credentials and Professional Honors**

Ph.D., Mechanical Engineering, Cornell University, 1995  
M.S., Mechanical Engineering, Cornell University, 1992  
B.S., Mechanical Engineering, Cornell University, (with Distinction), 1990

John W. Hyatt Award (Benefit to Society), for Outstanding Achievement in Plastics that Benefit Mankind, Awarded by the Society of Plastics Engineers, 2008

Lawrence D. Dorr Award, American Association of Hip and Knee Surgeons, for Most Outstanding Paper in Surgical Techniques and Technologies, 2008, 2009

Leroy Wyman Award, for Outstanding Contributions to Committee F-04 on Medical & Surgical Materials & Devices, American Society for Testing and Materials, May 2008

Otto Aufranc Hip Society Award, for the Best Paper Encompassing Important Advances in the Management of Hip Disorders, 2006

The Spine Education in Research Award, for the Best Basic Science Paper, Awarded by the Spine Arthroplasty Society, 2006

Fulbright Senior Specialist, Fulbright Scholar Program, Council for International Exchange of Scholars, 2006

MOSES Award, Committee F-04 on Medical & Surgical Materials & Devices, American Society for Testing and Materials, May 2000

## **Patents**

Patent 6,267,011: Method and Apparatus for Determining the True Stress and True Strain Behavior of a Ductile Polymer,” Issued July 31, 2001 (with C.W. Jewett and J.R. Foulds).

## **Publications**

Kurtz SM, Ong KL, Lau E, Bozic KJ, Berry D, Parvizi J. Prosthetic joint infection risk after TKA in the Medicare population. *Clin Orthop Relat Res* 2010 Jan; 468(1):52–56.

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Bozic KJ, Kurtz S, Lau E, Ong K, Chiu V, Vail TP, et al. The epidemiology of bearing surface usage in total hip arthroplasty in the United States. *J Bone Joint Surg Am* 2009 Jul; 91(7):1614–1620.

Punt IM, Cleutjens JP, de Bruin T, Willems PC, Kurtz SM, van Rhijn LW, et al. Periprosthetic tissue reactions observed at revision of total intervertebral disc arthroplasty. *Biomaterials* 2009 Apr; 30(11):2079–2084.

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Medel FJ, Kurtz SM, Hozack WJ, Parvizi J, Purtill JJ, Sharkey PF, et al. Gamma inert sterilization: A solution to polyethylene oxidation? *J Bone Joint Surg Am* 2009 Apr; 91(4):839–849.

Bozic KJ, Kurtz SM, Lau E, Ong K, Vail TP, Berry DJ. The epidemiology of revision total hip arthroplasty in the United States. *J Bone Joint Surg Am* 2009; 91(1):128–133.

Manley M, Ong K, Lau E, Kurtz SM. Total knee arthroplasty survivorship in the United States Medicare population: Effect of hospital and surgeon procedure volume. *J Arthroplasty* 2009 Oct; 24(7):1061–1067.

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Kurtz SM, Siskey RL, Dumbleton J. Accelerated aqueous aging simulation of in vivo oxidation for gamma-sterilized UHMWPE. *J Biomed Mater Res B Appl Biomater* 2009 Jul; 90(1):368–372.

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Kurtz SM, Hozack W, Marcolongo M, Turner J, Rimnac C, Edidin A. Degradation of mechanical properties of UHMWPE acetabular liners following long-term implantation. *J Arthroplasty* 2003; 18:68–78.

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Villarraga ML, Kurtz SM, Herr MP, Edidin AA. Multiaxial fatigue behavior of conventional and highly crosslinked UHMWPE during cyclic small punch testing. *J Biomed Mater Res* 2003; 66A:298–309.

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Kurtz SM, Manley M, Wang A, Taylor S, Dumbleton J. Comparison of the properties of annealed crosslinked (Crossfire) and conventional polyethylene as hip bearing materials. *Bull Hosp Jt Dis*, 61 2002–2003; 17–26.

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## **Books**

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### **Book Chapters**

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### **Scientific Exhibits**

Siskey SD, Day JS, Capello WN, D'Antonio JA, Kurtz SM, Ong KL. Late radiographic changes around a HA-coated stem: Feasibility of FE models to evaluate remodeling. Scientific Exhibit No. 17, 77th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 9–13, 2010.

Ong KL, Lau E, Villarraga ML, Glassman S, Kurtz SM. Evaluating on-label and off-label use of BMP in the U.S. using administrative data. Scientific Exhibit No. 71, 77th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 9-13, 2010.

Medel FJ, Kurtz SM, Klein G, Levine H, Sharkey P, Austin M, Goldberg V, Kraay M, Rimnac C. Revisiting the clinical and wear performance of Poly Two tibial inserts after long-term implantation. Scientific Exhibit No. SE24. 76<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, February 25–28, 2009.

Bozic KJ, Kurtz SM, Lau E, Ong K, Vail TP, Rubash HE, Berry DJ. The epidemiology of revision total knee arthroplasty in the United States. Scientific Exhibit No. SE84. 76<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, February 25–28, 2009.

Kurtz SM, Hozack W, Parvizi J, Purtill J, Sharkey P, MacDonald D, Kraay M, Goldberg V, Rimnac CM. Gamma inert sterilization: A solution to polyethylene oxidation? Scientific Exhibit No. SE06. 75<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, March 5–9, 2008.

Walter WL, Gillies RM, Donohoo S, Kurtz SM, Ranawat AS, Hozack WJ, Tuke MA, Waters TS. Squeaking hips. Scientific Exhibit No. SE13. 75<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, March 5–9, 2008.

Ong K, Lau E, Ianuzzi A, Villarraga ML, Kurtz SM. Future demand in spine fusions: U.S. projections to 2030. Scientific Exhibit No. SE64. 75<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, March 5–9, 2008.

Kurtz SM, Ong KL, Schmier J, Mowat F, Saleh K, Dybvik E, Karrholm J, Garellick G, Havelin LI, Furnes O, Malchau H, Lau E. Future clinical and economic impact of revision THA and TKA. Scientific Exhibit No. SE39. 74<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, CA, February 14–18, 2007.

Kurtz SM, Lau E, Zhao K, Mowat F, Ong KL, Halpern M. The future burden of hip and knee revisions: U.S. projections from 2005 to 2030. Scientific Exhibit No. SE53. 73<sup>rd</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 22–26, 2006.

Ong KL, Day J, Manley M, Kurtz SM. Biomechanics of the Birmingham hip resurfacing arthroplasty. Scientific Exhibit No. SE13. 73<sup>rd</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 22–26, 2006.

Kurtz SM, Ong KL, Manley M. Periprosthetic bone stresses in modular acetabular components of hip replacement for young patients. Scientific Exhibit No. SE21. 73<sup>rd</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 22–26, 2006.

### **Conference Papers and Abstracts**

Kurtz SM, Medel F, Parvizi J, Austin MS, Klein G, Hartzband M, Stulberg B, Garino J, Kraay M, Rimnac CM. Wear and material performance of 1<sup>st</sup> generation highly crosslinked polyethylene implanted up to 10 years. Paper No. 110, 77th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 9–13, 2010.

Ong KL, Lau E, Villarraga ML, Glassman S, Kurtz SM. Evaluating on-label and off-label use of BMP in the U.S. using administrative data. Paper No. 19, 77th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 9–13, 2010.

Malkani A, Ong K, Lau E, Kurtz SM, Manley M. Early and late dislocation risk following primary hip arthroplasty in the Medicare population. Poster No. 48, 77th Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 9–13, 2010.

Bozic KJ, Ong K, Lau E, Kurtz S, Vail TP, Rubash HE, Berry DJ. The comparative effectiveness of total hip arthroplasty bearing surfaces in the Medicare population. Paper No. 1, 19th Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 6–8, 2009.

Kurtz SM, Medel F, Parvizi J, Austin MS, Klein G, Hartzband M, Stulberg B, Garino J, Kraay M, Rimnac CM. Wear and material performance of 1<sup>st</sup> generation highly crosslinked polyethylene implanted up to 10 years. Paper No. 2, 19th Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 6–8, 2009.

Malkani A, Ong K, Lau E, Kurtz SM, Manley M. Short-term dislocation risk following primary hip arthroplasty in the Medicare population. Lawrence D. Dorr Award Paper, 19th Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 6–8, 2009.

Matar WY, Restrepo C, Parvizi J, Kurtz SM, Sharkey PF, Austin M, Hozack WJ. Revision hip arthroplasty for ceramic-on-ceramic squeaking hips does not compromise the results. Paper No. 22, 19th Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 6–8, 2009.

Kurtz SM, Pavri BB, Ho RT, Lau E, Zhao K. Fourteen-year trends in pacemaker implantation in the United States. Paper No. AB20-3. Transactions of the 30th Annual Scientific Sessions of the Heart Rhythm Society, Boston, MA, May 13–16, 2009.

Ong K, Lau E, Suggs J, Kurtz SM, Manley M. Complication risk following revision hip and knee arthroplasty in the Medicare population. Paper No. 181. 76<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, February 25–28, 2009.

Bozic K, Kurtz SM, Lau E, Ong K, Vail T, Berry D. The epidemiology of revision total hip arthroplasty in the United States. Paper No. 182. 76<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, February 25–28, 2009.

Kurtz SM, Lau E, Ong K, Zhao K, Kelley M, Bozic K. National projections of younger patient demand for primary and revision joint replacement. Paper No. 183. 76<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, February 25–28, 2009.

Ong K, Lau E, Mont M, Kurtz S, Manley M. Correlation of procedure time and surgeon volume with primary knee outcomes: A Medicare study. Paper No. 252. 76<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, February 25–28, 2009.

Edidin A, Ong K, Lau E, Kurtz S. Mortality risk for operated and non-operated vertebral fracture patients in the Medicare population. Paper No. 312. 76<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, February 25–28, 2009.

Bozic K, Kurtz SM, Lau E, Ong K, Vail T, Rubash H, Berry D. The epidemiology of THA bearing usage in the United States. Paper No. 616. 76<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, February 25–28, 2009.

Bozic KJ, Kurtz SM, Lau E, Ong K, Vail TP, Rubash HE, Berry DJ. The epidemiology of revision total knee arthroplasty in the United States. Poster No. 116. 76<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, February 25–28, 2009.

Medel FJ, Kurtz SM, Klein G, Levine H, Sharkey P, Austin M, Goldberg V, Kraay M, Rimnac C. Revisiting the clinical and wear performance of Poly Two tibial inserts after long-term implantation. Poster No. 189. 76<sup>th</sup> Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, February 25–28, 2009.

Medel F, Kurtz S, MacDonald D, Shah P, Hozack W, Sharkey P, Klein G, Hartzband M, Stulberg B, Garino J, Kraay M, Rimnac C. First-generation highly crosslinked polyethylenes in THA: Clinical and material performance. Vol. 34, No. 0160. Transactions of the 55<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, February 22–25, 2009.

Day J, Lau E, Ong K, Manley M, Kurtz S. Where is the baby boomer bulge? Projections for the incidence of hip fractures in the United States. Vol. 34., No. 0228. Transactions of the 55<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, February 22–25, 2009.

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Kurtz S, Siskey R. Small punch testing of artificially aged gamma-sterilized polycarbonate urethane acetabular components. Vol. 34, No. 0471. Transactions of the 55<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, February 22–25, 2009.

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Kurtz SM, Lau E, Ong K, Bozic K, Parvizi J, Berry D. Prosthetic joint infection risk following total hip and knee arthroplasty in the Medicare population. Paper No. 3, 18<sup>th</sup> Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 7–9, 2008.

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Kurtz SM, Lau E, Ong K, Zhao K, Kelley M, Bozic K. Younger patient demand for primary and revision joint replacement: National projections from 2010 to 2030. Paper No. 31, 18<sup>th</sup> Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 7–9, 2008.

Bozic K, Kurtz SM, Lau E, Ong K, Vail T, Rubash H, Berry D. Premium bearing surface usage in total hip arthroplasty. Paper No. 41. 18<sup>th</sup> Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 7–9, 2008.

Ong K, Lau E, Suggs J, Kurtz SM, Manley M. Relative risk of complications following revision hip and knee arthroplasty in the Medicare population. Poster No. 281. 18<sup>th</sup> Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 7–9, 2008.

Ong K, Rundell S, Liepins I, Laurent R, Markel D, Kurtz S. Biomechanical evaluation of acetabular component polyethylene stresses, fracture risk, and wear rate during press-fit implantation. Poster No. P10, 2<sup>nd</sup> Joint Meeting of the Bone Research Society and the British Orthopaedic Research Society, Manchester, UK, June 23–25, 2008.

Markel D, Day J, Siskey R, Liepins I, Kurtz S, Ong K. Deformation of metal-backed acetabular components and the impact of liner thickness in a cadaveric model. Poster No. P18, 2<sup>nd</sup> Joint Meeting of the Bone Research Society and the British Orthopaedic Research Society, Manchester, UK, June 23–25, 2008.

Baxter R, Freeman T, Kurtz SM, Steinbeck M. Quantitative analysis of innate and adaptive immune response in periprosthetic THR retrieval tissue. Session No. 81. Transactions of the 8<sup>th</sup> World Biomaterials Congress, Amsterdam, the Netherlands, May 28–June 1, 2008.

Medel F, Kurtz SM, Brenner E, Sharkey P, Purtill J, Parvizi J, Goldberg V, Kraay M, Klein G, Hartzband M, Levine H, Rimnac C. Do post-irradiation stabilized polyethylenes oxidize in vivo? FTIR analysis of historical, conventional and stabilized polyethylene components for

TKA. Session No. 58. Transactions of the 8<sup>th</sup> World Biomaterials Congress, Amsterdam, the Netherlands, May 28–June 1, 2008.

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Baxter R, Steinbeck M, Tipper J, Rimnac C, Parvizi J, Marcolongo M, Kurtz SM. Evaluation of methods for optimized periprosthetic tissue digestion. Poster No. P-Sat-I-573. Transactions of the 8<sup>th</sup> World Biomaterials Congress, Amsterdam, the Netherlands, May 28–June 1, 2008.

Baxter R, Steinbeck M, Ianuzzi A, van Ooij A, Ross R, Isaza J, Kurtz SM. Polarized light analysis of polyethylene particle load in TDR and THR retrieval tissue. Poster No. P-Sat-A-001. Transactions of the 8<sup>th</sup> World Biomaterials Congress, Amsterdam, the Netherlands, May 28–June 1, 2008.

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Kurtz S, MacDonald D, Ianuzzi A, van Ooij A, Isaza J, Ross R. TDR oxidative properties following gamma sterilization in air and first-generation barrier packaging. Paper No. 42. 8<sup>th</sup> Annual Meeting of the Spine Arthroplasty Society, Miami Beach, FL, May 6–9, 2008.

Kurtz S, Baxter R, Steinbeck M, Ianuzzi A, van Ooij A, Isaza J, Ross R. Polyethylene particle load in TDR and THR retrieval tissue using polarized light microscopy. Paper No. 43. 8<sup>th</sup> Annual Meeting of the Spine Arthroplasty Society, Miami Beach, FL, May 6–9, 2008.

Rundell S, Auerbach J, Balderston R, Kurtz S. Evaluating the influence of TDR positioning on subsidence and facet arthrosis. Paper No. 47. 8<sup>th</sup> Annual Meeting of the Spine Arthroplasty Society, Miami Beach, FL, May 6–9, 2008.

Kurtz S, MacDonald D, Ianuzzi A. Does chronic rim impingement influence dome wear in mobile bearing TDR? Paper No. 57. 8<sup>th</sup> Annual Meeting of the Spine Arthroplasty Society, Miami Beach, FL, May 6–9, 2008.

Rundell S, Guerin H, Auerbach J, Kurtz S. Nucleus pulposis replacement material stiffness properties affect vertebral body strains and remodeling response. Paper No. 67. 8<sup>th</sup> Annual Meeting of the Spine Arthroplasty Society, Miami Beach, FL, May 6–9, 2008.

Guerin H, Heinly J, Auerbach J, Siskey R, Lonner B, Villarraga M, Kurtz S. Identifying appropriate interventional timepoints for nucleus pulposis replacements: Impact of degeneration dependent mechanical properties of the cartilaginous endplate. Paper No. 72. 8<sup>th</sup> Annual Meeting of the Spine Arthroplasty Society, Miami Beach, FL, May 6–9, 2008.

Ianuzzi A, Kurtz S, van Ooij A, Bindal R, Ross R, Bohinski R, Kane W, Siskey R, Shah P, Villarraga M. In vivo deformation, surface damage, and biostability of polycarbonate urethane spacers from retrieved Dynesys systems. Paper No. 78. 8<sup>th</sup> Annual Meeting of the Spine Arthroplasty Society, Miami Beach, FL, May 6–9, 2008.

Rundell S, Auerbach J, Balderston R, Kurtz S. Effects of TDR implantation and positioning on adjacent level facet forces and disc pressures. Poster No. 42. 8<sup>th</sup> Annual Meeting of the Spine Arthroplasty Society, Miami Beach, FL, May 6–9, 2008.

Kurtz SM, Ebert M, Siskey R, Ciccarelli L, Reitman M, Harper ML, Chan FW. Natural and accelerated aging of polyurethanes in the Bryan cervical disc. Poster No. 118. 8<sup>th</sup> Annual Meeting of the Spine Arthroplasty Society, Miami Beach, FL, May 6–9, 2008.

Siskey R, Villarraga M, Guerin H, Shah P, Kurtz S. Developing a surrogate annulus fibrosis model for nucleus pulposus replacement wear and fatigue characterization. Poster No. 136. 8<sup>th</sup> Annual Meeting of the Spine Arthroplasty Society, Miami Beach, FL, May 6–9, 2008.

Baxter R, Steinbeck M, Tipper J, Rimnac C, Parvizi J, Marcolongo M, Kurtz SM. Evaluation of methods for optimized periprosthetic tissue digestion. Paper No. 58. 54<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2–5, 2008.

Medel F, Kurtz SM, Brenner E, Sharkey P, Purtill J, Parvizi J, Goldberg V, Kraay M, Klein G, Hartzband M, Levine H, Rimnac C. In vivo oxidation and oxidation potential in gamma air, gamma inert and post-irradiation stabilized polyethylene components for TKA. Paper No. 191. 54<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2–5, 2008.

Manley M, Ong K, Lau E, Kurtz S. THA and TKA survivorship in the United States Medicare population: Effect of hospital and surgeon procedure volume. Paper No. 220. 54<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2–5, 2008.

Bozic K, Kurtz S, Lau E, Ong K, Vail T, Berry D. Revision total joint arthroplasty: Early insights into cause of failure, type of revision from newly implemented diagnosis and procedure codes. Paper No. 235. 54<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2–5, 2008.

Baxter R, Steinbeck M, Ianuzzi A, van Ooij A, Ross R, Isaza J, Kurtz SM. Periprosthetic polyethylene particle load of retrieved TDR tissue: Comparison with THR tissue. Short Talk Poster No. 389. 54<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2–5, 2008.

Baxter R, Freeman T, Kurtz SM, Steinbeck M. Immunohistochemical analysis of periprosthetic tissue from THR revision surgery. Poster No. 749. 54<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2–5, 2008.

Day J, Beredjikian P, Lau E, Ong K, Kurtz S. Trends in the incidence and treatment of wrist fractures in the Medicare population. Poster No. 1026. 54<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2–5, 2008.

Kurtz SM, MacDonald D, Ianuzzi A, van Ooij A, Isaza J, Ross ERS. In vivo oxidation and oxidation potential for polyethylene in total disc replacement following gamma sterilization in air and first-generation barrier packaging. Poster No. 1324. 54<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2–5, 2008.

Ianuzzi A, Kurtz S, van Ooij A, Bindal R, Ross R, Bohinski R, Kane W, Siskey R, Shah P, Villarraga

M. In vivo deformation, surface damage, and biostability of polycarbonate urethane spacers from retrieved Dynesys systems. Poster No. 1325. 54<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2–5, 2008.

Rundell S, Auerbach J, Balderston R, Kurtz S. Total disc replacement positioning affects facet contact forces and vertebral body strains. Poster No. 1361. 54<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2–5, 2008.

Guerin H, Heinly J, Auerbach J, Siskey R, Lonner B, Villarraga M, Kurtz S. Human intervertebral disc cartilaginous endplate tensile mechanical properties are anisotropic and degeneration dependent. Poster No. 1444. 54<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2–5, 2008.

Sobieraj M, Kurtz SM, Rimnac C. Notch sensitivity behavior of PEEK in monotonic tension. Poster No. 1685. 54<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2–5, 2008.

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## **Editorships and Editorial Review Boards**

Founding Editor: UHMWPE Lexicon Website ([www.uhmwpe.org](http://www.uhmwpe.org)); Medical PEEK Lexicon Website ([www.medicalpeek.org](http://www.medicalpeek.org))

Editorial Board: *Journal of Arthroplasty*

Founding Board Member: Arthroscopy Research Foundation, Paoli, PA

Conference Moderator: Orthopaedic Research Society, Society for Biomaterials

Co-Chairman, Symposium on Highly Crosslinked and Thermally Treated UHMWPE for Total Joint Replacements, Miami FL, November 7–8, 2002, Committee F04, American Society for Testing and Materials (ASTM)

Planning Committee Member, 2002–2003, Consensus Development Conference on Total Knee Replacement, National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) and the Office of Medical Applications of Research (OMAR) of the National Institutes of Health (NIH).

## **Peer Reviewer**

*Journal of Bone and Joint Surgery*

*Clinical Orthopaedics and Related Research*

*Journal of Biomechanics*

*Journal of Biomechanical Engineering*

*Biomaterials*

*Journal of Biomedical Materials Research*

*Scanning Microscopy/Cells and Materials*

## **Selected Invited Seminars and Workshops**

Kurtz S. PEEK: A new frontier in structural biomaterials and bone scaffolds. Keynote speaker, Third International Conference on Mechanics of Biomaterials and Tissues, Clearwater, FL, December 2009.

Kurtz, S. UHMWPE implant technology in 2009: State of the art and future directions. Invited speaker, 4<sup>th</sup> International UHMWPE Meeting, Torino, Italy, September 2009.

Kurtz S. Performance of artificial disc bearings. Symposium on Controversies in Bearing Surface Science, 2009 ORS/AAOS Annual Meeting, Las Vegas, NV, February 2009.

Kurtz S. PEEK Biomaterials: From isoelastic hip stems to bone scaffolds. Symposium on Biological Materials Science, The Minerals, Metals & Material Society, San Francisco, CA, February 2009.

Kurtz S. Utilization in TJA: Something's got to give. Carl T. Brighton Workshop on Health Policy Issues in Orthopaedic Surgery, Tampa, FL, November 2008.

Kurtz S. Retrieval analysis of motion preserving spine implants. Future of Arthroplasty Standards Workshop, American Society for Testing and Materials, St. Louis, MO, November 2008.

Kurtz S. Explant analyses of disc arthroplasties. Symposium on Lessons Learned from Disc Arthroplasty, North American Spine Society, Toronto, Canada, October 2008.

Kurtz S. Implantable PEEK polymer: Properties, processing and applications. 8<sup>th</sup> World Biomaterials Congress, Amsterdam, the Netherlands, May 2008.

Kurtz S. How have total disc replacements in the spine influenced wear behavior? 2007 AAOS Osteolysis and Implant Wear: Biological, Biomedical Engineering, and Surgical Principles, Austin, TX, November 2007.

Kurtz S. *In vivo* oxidation and oxidation potential of historical, conventional, and highly crosslinked polyethylene. 3<sup>rd</sup> UHMWPE International Meeting - Polyethylene in Total Joint Replacement Systems: Concerns and Solutions. Facultad de Medicina, Universidad Autónoma de Madrid, Madrid, Spain, September 2007.

Kurtz S. Overview of the regulatory process and reimbursement for scientist inventors. Coulter Foundation Early Career Awardees Meeting, Key Biscayne, FL, August 2007.

Kurtz S. Wear and surface damage of total joint replacement components: Lessons of retrieval analysis. Wear Instructional Course, 7th Annual Meeting of the Spine Arthroplasty Society, Berlin, Germany, May 2007.

Kurtz S. Logistics and implementation of a multi-center, regional total hip replacement retrieval program to investigate *in vivo* oxidation of polyethylene. WG 3 Meeting of COST 537, Porto, Portugal, March 2007.

Kurtz S. Artificial discs. Artificial Discs Workshop, 52nd Annual Meeting of the Orthopaedic Research Society, March 2006.

Kurtz S. A primer on polyethylene. 7th Annual Alternative Bearing Symposium, University of Pennsylvania, PA, October 2004.

Kurtz S. Lessons learned from retrieval analysis of highly crosslinked UHMWPE. 7th Annual Alternative Bearing Symposium, University of Pennsylvania, PA, October 2004.

Kurtz S. Overview of medical device law and regulation. Introduction to food and drug law workshop, food and drug law institute. San Francisco, CA, June 2004.

Kurtz S. Advanced finite element analysis and model validation. ASTM Workshop, Salt Lake City, UT, April 2004.

Kurtz S. The required mechanical properties for hip and knee components. UHMWPE For Arthroplasty: Past, Present, and Future. University of Torino, Torino, Italy, September 2003.

Kurtz S. International perspective of standards development and overview of new miniature specimen mechanical test methods for UHMWPE. 25th Meeting of the European Society for Biomaterials, London, England, September 2001.

Kurtz S. Risk and failure analysis of medical devices. Central Atlantic States Association (CASA) of Food and Drug Officials Annual Medical Device Conference, May 2001.

Kurtz S. Oxidation resistance and shelf life of UHMWPE. New Test Methods for Evaluating the Performance of Conventional and Crosslinked UHMWPE Workshop, F04 Meeting for the American Society for Testing and Materials, May 2001.

Kurtz S. Miniature specimen mechanical testing techniques for UHMWPE used in orthopedic components. Ultra-High Molecular Weight Polyethylene Workshop, 27th Annual Meeting of the Society for Biomaterials, April 2001.

Kurtz S. Morphology and mechanical behavior in UHMWPE after natural and accelerated aging. Polyethylene 2001 Workshop, 46th Annual Meeting of the Orthopaedic Research Society, March 2000.

Kurtz S. The mechanical behavior of UHMWPE at large deformations: Bulk and miniature specimen testing. Department of Mechanical Engineering Seminar, University of Leeds, October 1998.

Kurtz S. Polyethylene properties and contact simulation for total hip arthroplasty. Contact Mechanics Workshop, 43rd Annual Meeting of the Orthopaedic Research Society, February 1997.

### **Guest Lectures**

Cleveland Clinic, Cleveland, OH  
Princeton University, Princeton, NJ  
Temple University, Philadelphia, PA  
Drexel University, Philadelphia, PA  
University of California at Berkeley, Berkeley, CA  
Stanford University, Palo Alto, CA  
University of Zaragoza, Zaragoza, Spain  
University of Madrid, Spain

## **Current Academic Appointments**

Director, Implant Research Center

Research Professor, School of Biomedical Engineering, Science, and Health Systems, Drexel University, Philadelphia, PA

Research Assistant Professor, Department of Orthopaedic Surgery, Rothman Institute, Thomas Jefferson University, Philadelphia, PA

## **Professional Affiliations**

American Academy of Orthopaedic Surgeons

American Association for Hip and Knee Surgeons

Orthopaedic Research Society, Society for Biomaterials

American Society for Testing and Materials (Vice-Chairman of Subcommittee F04.11 on Polymeric Materials)

Spine Arthroplasty Society