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Engineering & Scientific Consulting

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### Professional Profile

Dr. Kurtz is a Corporate Vice President and the Director of Exponent's Biomedical Engineering practice. 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 has expertise in the clinical performance of polyethylene, ceramic, and metal-on-metal hip implants. His 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, national implant registries, and national health care databases; clinical studies of medical devices; mechanical behavior of synthetic biomaterials; contact mechanics of artificial joints; and structural evaluation of bone-implant systems. His recent research interests include additive manufacturing of high-temperature polymers, including PEEK, to create novel drug delivery devices that treat spine and orthopaedic implant infection.

Dr. Kurtz is active in many professional societies, including the American Academy of Orthopedic Surgeons, the American Association of Hip and Knee Surgeons, the Hip Society, the Knee Society, and the American Society for Testing and Materials (ASTM). Dr. Kurtz has edited eight books and written over 210 journal articles and 470 conference abstracts. He is the founding editor of three educational websites: the UHMWPE Lexicon ([www.uhmwpe.org](http://www.uhmwpe.org)); the Medical PEEK Lexicon ([www.medicalpeek.org](http://www.medicalpeek.org)); and the Medical Ceramics Encyclopedia ([www.medicalceramics.org](http://www.medicalceramics.org)). He has co-edited STP 1591: Modularity and Tapers in Total Joint Replacements for the ASTM in 2015 and recently completed the UHMWPE Biomaterials Handbook, 3rd Edition, which was published in 2016.

### Academic Credentials & 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

Patrick G. Laing Award (formerly called the F04 Award of Merit), for Outstanding Contributions in the Field of Medical & Surgical Materials & Devices, American Society for Testing and Materials, May 2015

James A. Rand Award, American Association of Hip and Knee Surgeons, for Most Outstanding Paper in Arthroplasty Surgery, 2012

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

## Academic Appointments

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

## Professional Affiliations

The Hip Society

The Knee Society

American Academy of Orthopaedic Surgeons American Association for Hip and Knee Surgeons (Exhibits Committee, 2009-2013; Orthopaedic Device Forum, 2014-)

Orthopaedic Research Society

American Society for Testing and Materials (Vice-Chairman of Subcommittee F04.11 on Polymeric Materials; task force chair for UHMWPE and PEEK specification and characterization; task force chair for metal-on-metal hip clinical characterization, 2011-2012)

## 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

Golish SR, Kurtz SM, Boyan BD. Can 3D Printing Revolutionize Orthopaedic Devices? AAOS Now: <https://www.aaos.org/AAOSNow/2018/Jan/Cover/Cover01/> , Jan 2018.

Higgs GB, MacDonald DW, Lowell J, Padayatil A, Mihalko WM, Siskey RL, Gilbert JL, Rimnac CM, Kurtz SM. Technical Note: Is Corrosion a Threat to the Strength of the Taper Connection in Femoral Components of Total Hip Replacements? Corrosion 73(12): 1538, 2017.

Kurtz SM, Lau E, Baykal D, Springer BD. Outcomes of Ceramic Bearings After Primary Total Hip Arthroplasty in the Medicare Population. *J Arthroplasty* 32(3): 743, 2017.

Kurtz SM, Bracco P. Editorial Comment: Symposium: Advances in Polyethylene Biomaterials. *Clin Orthop Relat Res* 475(5): 1347, 2017.

Arnholt CM, MacDonald DW, Underwood RJ, Guyer EP, Rimnac CM, Kurtz SM, Implant Research Center Writing C, Mont MA, Klein GR, Lee GC, Chen AF, Hamlin BR, Cates HE, Malkani AL, Kraay MJ. Do Stem Taper Microgrooves Influence Taper Corrosion in Total Hip Arthroplasty? A Matched Cohort Retrieval Study. *J Arthroplasty* 32(4): 1363, 2017.

Cafri G, Paxton EW, Love R, Bini SA, Kurtz SM. Is There a Difference in Revision Risk Between Metal and Ceramic Heads on Highly Crosslinked Polyethylene Liners? *Clin Orthop Relat Res* 475(5): 1349, 2017.

Elmallah RK, Chughtai M, Adib F, Bozic KJ, Kurtz SM, Mont MA. Determining Health-Related Quality-of-Life Outcomes Using the SF-6D Following Total Hip Arthroplasty. *J Bone Joint Surg Am* 99(6): 494, 2017.

Elmallah RK, Chughtai M, Khlopas A, Bhowmik-Stoker M, Bozic KJ, Kurtz SM, Mont MA. Determining cost-effectiveness of total hip and knee arthroplasty using the short form-6D utility measure. *J Arthroplasty* 32(2): 351, 2017.

Veruva SY, Lanman TH, Isaza JE, Freeman TA, Kurtz SM, Steinbeck MJ. Periprosthetic UHMWPE Wear Debris Induces Inflammation, Vascularization, and Innervation After Total Disc Replacement in the Lumbar Spine. *Clin Orthop Relat Res* 475(5): 1369, 2017.

Perfetti DC, Boylan MR, Naziri Q, Paulino CB, Kurtz SM, Mont MA. Have Periprosthetic Hip Infection Rates Plateaued? *J Arthroplasty* 32(7): 2244, 2017.

Kurtz SM, Lau EC, Ong KL, Adler EM, Kolisek FR, Manley MT. Has health care reform legislation reduced the economic burden of hospital readmissions following primary total joint arthroplasty? *J Arthroplasty* 32(11): 3274, 2017.

Kurtz SM, Lau EC, Ong KL, Adler EM, Kolisek FR, Manley MT. Which clinical and patient factors influence the national economic burden of hospital readmissions after total joint arthroplasty? *Clin Orthop Relat Res* 475(12): 2926, 2017.

MacDonald DW, Chen AF, Lee GC, Klein GR, Mont MA, Kurtz SM, Taper Corrosion Writing C, Cates HE, Kraay MJ, Rimnac CM. Fretting and corrosion damage in taper adapter sleeves for ceramic heads: a retrieval study. *J Arthroplasty* 32(9): 2887, 2017.

Son MS, Lau E, Parvizi J, Mont MA, Bozic KJ, Kurtz S. What Are the Frequency, Associated Factors, and Mortality of Amputation and Arthrodesis After a Failed Infected TKA? *Clin Orthop Relat Res* 475(12): 2905, 2017.

Urish KL, Hamlin BR, Plakseychuk AY, Levison TJ, Higgs GB, Kurtz SM, DiGioia AM. Trunnion Failure of the Recalled Low Friction Ion Treatment Cobalt Chromium Alloy Femoral Head. *J Arthroplasty* 32(9): 2857, 2017.

Kurtz SM, Lau EC, Baykal D, Odum SM, Springer BD, Fehring TK. Are Ceramic Bearings Becoming Cost-Effective for All Patients? *J Arthroplasty*, Published online, 2017.

MacDonald DW, Higgs GB, Chen AF, Malkani AL, Mont MA, Kurtz SM. Oxidation, Damage Mechanisms, and Reasons for Revision of Sequentially Annealed Highly Crosslinked Polyethylene in Total Knee Arthroplasty. *J Arthroplasty*, Published online, 2017.

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Ong KL, Anderson AF, Niazi F, Fierlinger AL, Kurtz SM, Altman RD. Hyaluronic acid injections in medicare knee osteoarthritis patients are associated with longer time to knee arthroplasty. *J Arthroplasty.* 2016;31:1667-73.

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Bozic KJ, Lau E, Ong K, Chan V, Kurtz S, Vail TP, Rubash HE, Berry DJ. Risk factors for early revision after primary TKA in Medicare patients. *Clin Orthop Relat Res.* 2014; 472:232-7.

Eddin AA, Kurtz SM, Ong KL. Treatment of osteoporotic vertebral fractures. *JAMA Internal Medicine* 2014; 174:642.

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Lovald ST, Ong KL, Malkani AL, Lau EC, Schmier JK, Kurtz SM, Manley MT. Complications, mortality, and costs for outpatient and short-stay total knee arthroplasty patients in comparison to standard-stay patients. *J Arthroplasty*. 2014; 29:510-5.

Malviya A, Wilson G, Kleim B, Kurtz SM, Deehan D. Factors influencing return to work after hip and knee replacement. *Occup Med (Lond)*. 2014;64:402-9.

Phillips EA, Klein GR, Cates HE, Kurtz SM, Steinbeck M. Histological characterization of periprosthetic tissue responses for metal-on-metal hip replacement. *J Long Term Eff Med Implants*. 2014;24:13-23.

MacKinlay K, Falls T, Lau E, Day J, Kurtz S, Ong K, Malkani A. Decreasing incidence of femoral neck fractures in the Medicare population. *Orthopedics*. 2014;37:e917-24.

Veruva SY, Steinbeck MJ, Toth J, Alexander DD, Kurtz SM. Which design and biomaterial factors affect clinical wear performance of total disc replacements? A systematic review. *Clin Orthop Relat Res*. 2014;472:3759-69.

Kurtz SM, Kocagoz SB, Hanzlik JA, Underwood RJ, Gilbert JL, MacDonald DW, Lee GC, Mont MA, Kraay MJ, Klein GR, Parvizi J, Rimnac CM. Do ceramic femoral heads reduce taper fretting corrosion in hip arthroplasty? A retrieval study. *Clin Orthop Relat Res*. 2013; 471:3270-82.

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Kurtz SM, Lanman TH, Higgs G, Macdonald DW, Berven SH, Isaza JE, Phillips E, Steinbeck MJ. Retrieval analysis of PEEK rods for posterior fusion and motion preservation. *Eur Spine J*. 2013; 22:2752-9.

Higgs GB, Hanzlik JA, MacDonald DW, Gilbert JL, Rimnac CM, Kurtz SM. Is increased modularity associated with increased fretting and corrosion damage in metal-on-metal total hip arthroplasty devices? A retrieval study. *J Arthroplasty*. 2013; 28:2-6.

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Carreon LY, Ong KL, Lau E, Kurtz SM, Glassman SD. Risk of osteoporotic fracture after steroid injections in Medicare patients. Paper No. 84, North American Spine Society 29th Annual Meeting, San Francisco, CA, November 12-15, 2014.

Ong KL, Lau E, Kurtz SM, Hansen E, Lonner J. Short-term complications and revision following unicondylar knee arthroplasty. Poster No. 54, 24th Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 6-9, 2014.

MacDonald DW, Kurtz SM, Kocagoz SB, Hanzlik J, Underwood RJ, Gilbert JL, Lee GC, Mont MA, Kraay MJ, Klein GR, Parvizi J, Day JS, Rimnac CM. Does Taper Angle Clearance Influence the Fretting Corrosion Behavior of Modular THA Components? A Matched Cohort Study. 27th Annual Congress of the International Society for Technology in Arthroplasty, Kyoto, Japan, 24-27 Sep, 2014.

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Kocagoz SB, Arnholt CM, Baykal D, MacDonald DW, Day JS, Kurtz SM. Calculation of Volumetric Material Loss From Taper-Trunnion Junctions: Development and Validation of a Quantitative Method. 27th Annual Congress of the International Society for Technology in Arthroplasty, Kyoto, Japan, 24 - 27 Sep, 2014.

MacDonald DW, Baykal D, Underwood RJ, Malkani AL, Parvizi J, Kurtz SM. The Effect of in Vivo Oxidation on Clinical vs. in Vitro Wear Rates in Retrieved 1st Generation Annealed Highly Crosslinked UHMWPE. 27th Annual Congress of the International Society for Technology in Arthroplasty, Kyoto, Japan, 24 - 27 Sep, 2014.

Arnholt CM, Kocagoz SB, MacDonald DW, Gilbert JL, Parvizi J, Malkani AL, Klein GR, Kraay MJ, Rimnac CM, Kurtz SM. Corrosion and Damage Mechanisms in Retrieved Long-Term TKA Femoral Components. 27th Annual Congress of the International Society for Technology in Arthroplasty, Kyoto, Japan, 24 - 27 Sep, 2014.

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MacDonald DW, Mont MA, Parvizi J, Malkani A, Hozack W, and Kurtz SM. Retrieval Analysis of Sequentially Annealed Highly Cross-Linked Polyethylene Used in THA. 1st Annual Pan Pacific Orthopaedic Congress, International Congress for Joint Reconstruction, Kona, Hawaii, USA, July 16 - 19, 2014.

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Bozic K, Kamath A, Lau E, Ong K, Kurtz S, Chan V, Vail T, Berry D, Rubash H. The epidemiology of revision total knee arthroplasty in the United States. Paper No. 330, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Bozic K, Lau E, Ong K, Kamath A, Chan V, Vail T, Kurtz S, Rubash H, Berry D. Quantifying the burden of periprosthetic joint infection in revision total hip and total knee arthroplasty Paper No. 432, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Ong KL, Lotke PA, Lau E, Manley MT, Kurtz SM. Prevalence and costs of rehabilitation and physical therapy after primary TJA. Paper No. 395, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Arnholt C, MacDonald DW, Tohfafarosh M, Gilbert JL, Klein GR, Mont MA, Parvizi J, Rimnac CM, Kurtz SM. Mechanically Assisted Taper Corrosion in Modular TKA. Paper No 318, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Day JS, MacDonald DW, Arnholt C, Williams GR, Getz CL, Kraay MJ, Rimnac CM, Kurtz SM. What Biomechanical and Patient Factors Influence Fretting Corrosion in Total Shoulder Replacement? Paper

624, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Bozic K, Kamath A, Lau E, Ong K, Kurtz S, Chan V, Rubash H, Berry D, Vail T. Trends in THA bearing couple usage in the United States. Poster No. 92, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Kocagöz SB, Underwood RJ, MacDonald DW, Day JS, and Kurtz SM. What Is the Clinical Relevance of Visual Inspection of the Head / Stem Taper Junctions in Large Metal-on-Metal Hips? Poster No P067, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Ong K, Kurtz SM, Lau E, Parvizi J, Mont MA, Manley MT. Migratory patterns of primary total hip and knee patients influence hospital utilization. Poster No. 951, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Arnholt C, MacDonald DW, Tohfafarosh M, Gilbert JL, Rimnac CM, Klein GR, Mont MA, Parvizi J, Cates HE, Lee GC, Malkani A, Kraay MJ, Kurtz SM. Mechanically Assisted Taper Corrosion in Modular TKA. Poster No 849, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Day JS, MacDonald DW, Arnholt C, Williams GR, Getz CL, Kraay MJ, Rimnac CM, Kurtz SM. What Biomechanical and Patient Factors Influence Fretting Corrosion in Total Shoulder Replacement? Poster No 990, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Hanzlik JA, Day JS, Klein GR, Levine HB, Hartzband MA, Parvizi J, Kraay MJ, Rimnac CM, Kurtz SM. Analysis of Bone Ingrowth in Retrieved Porous Tantalum Tibial Trays. Poster No 961, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Kocagöz SB, Underwood RJ, MacDonald DW, Gilbert JL, Day JS, Kurtz SM. Quantitative Taper Angle Measurement Method for Retrieved Femoral Heads and Stems. Poster No 1800, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Kurtz SM, Zielinska O, MacDonald DW, Parvizi J, Mont MA, Klein GR, Kraay MJ, Stulberg B, Lee GC, Malkani A, Rimnac CM. Oxidation and Rim Damage of Sequentially Annealed HXLPE in Total Hip Arthroplasty. Poster No 984, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

MacDonald DW, Baykal D, Underwood RJ, Kurtz SM. Assessment of Tribological Properties of Retrieved 1st Generation Annealed Highly Crosslinked UHMWPE Using Multidirectional Pin-on-Disk Testing. Poster No 939, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Tohfafarosh M, Baykal D, Mansmann K, Kurtz SM. Finite Element Material Modeling and Evaluation of Sterilization Effects on a Hydrogel. Poster No 306, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Arnholt C, MacDonald DW, Tohfafarosh M, Gilbert JL, Rimnac CM, and Kurtz SM. Mechanically assisted taper corrosion in TKA. Paper No. 34. 23rd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 8-10, 2013.

Ong KL, Lotke PA, Lau E, Manley MT, and Kurtz SM. Prevalence and costs of rehabilitation and physical therapy after primary total joint arthroplasty. Poster No. 148. 23rd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 8-10, 2013.

Bozic KJ, Lau E, Ong K, Chiu V, Kurtz SM, Vail TP, Rubash HE, Berry DJ. Risk factors for early revision following primary total knee arthroplasty in Medicare patients. Poster No. 204, 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 19-23, 2013.

Bozic KJ, Lau E, Ong K, Chiu V, Kurtz SM, Vail TP, Rubash HE, Berry DJ. Risk factors for early revision following primary total hip arthroplasty in Medicare patients. Poster No. 72, 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 19-23, 2013.

Lovald ST, Ong K, Lau E, Schmier JK, Bozic KJ, Kurtz SM. Mortality, cost and downstream disease of total hip arthroplasty patients in the Medicare population. Paper No. 779, 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 19-23, 2013.

Edidin AA, Ong K, Lau E, Kurtz SM. Morbidity and mortality after vertebral augmentation and non-operative management of vertebral fractures. Paper No. 448, 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 19-23, 2013.

Kurtz SM, Ong K, Lau E, Watson H, Bozic KJ. Impact of the economic downturn on TJR demand in the U.S.: updated projections for TJR utilization through 2020. Poster No. 104, 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 19-23, 2013.

Ong K, Watson H, Manley MT, Kurtz SM. Comparison of infection, revision and surgical interventions between unicondylar and total knee arthroplasty. Poster No. 169, 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 19-23, 2013.

Lovald S, Ong K, Lau E, Schmier J, Bozic K, Kurtz S. A Medicare analysis of mortality, disease and healthcare spending related to hip osteoarthritis. Poster No. 992, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

Kurtz SM, Walkenhorst R, Hufen J, Siskey RL. Baseline properties and wear resistance of Vitamin E containing ultra-high molecular weight polyethylene grades. Poster No. 1235A, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

Kurtz SM, MacDonald D, Kocagoz S, Tohfafarosh M, Parvizi P, Mont M, Malkani A. Oxidative and wear properties of sequentially annealed highly crosslinked polyethylene used in total knee arthroplasty, Poster No. 1715, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

G. B. Higgs, J. Hanzlik, D. MacDonald, G. Klein, J. Parvizi, M. A. Mont, M. Kraay, C. M. Rimnac, S. M. Kurtz. Does Fretting and Corrosion Occur at Modular Interfaces other than the Head-Stem Junction in Metal-on-Metal Total Hip Arthroplasty Devices? Poster No. 1759, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

R. J. Underwood, D. MacDonald, G. Higgs, R. L. Siskey, J. Day, S. M. Kurtz. Tribocorrosion in Taper Junctions: Measurements and Observations from Explanted MoM Hips. Poster No. 1763, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

S. M. Kurtz, D. MacDonald, G. B. Higgs, J. Gilbert, J. Parvizi, G. Klein, M. Mont, A. Marshall, M. Kraay, B. Stulberg, H. Cates, A. Malkani, C. M. Rimnac. Are 36+ MM Diameter HXLPE Bearings at Risk of Increased Wear from Modular Taper Corrosion with Ceramic and CoCr Heads? Poster No. 1768, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

S. M. Kurtz, D. MacDonald, S. Kocagoz, M. Tohfafarosh, J. Parvizi, M. Mont, A. Malkani. Retrieval Analysis of Sequentially Annealed Highly Crosslinked Polyethylene Used in Total Hip Arthroplasty. Poster No. 1778, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29,

2013.

R. L. Siskey, S. M. Kurtz, M. Kyomoto, U. Masaru, J. Weisenburger, H. Haider. In vitro Wear Performance of MPC-grafted UHMWPE for Total Hip Replacement. Poster No. 1785, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

R. J. Underwood, D. MacDonald, G. Higgs, J. Day, R. L. Siskey, S. M. Kurtz. Does Visual Inspection of the Taper Head / Stem Junctions in Metal-on-Metal Hips Accurately Characterize the Corrosion and Wear? Poster No. 1797, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

D. MacDonald, D. Baykal, S. Kocagoz, M. Tohfafarosh, S. M. Kurtz. Can Pin-on-Disk Testing Be Used to Assess the Wear Performance of Retrieved UHMWPE Liners? Poster No. 1817, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

Bozic K, Lau E, Ong K, Chiu V, Kurtz S, Vail TP, Rubash HE, Berry DJ. Risk factors for early revision following primary TKA in Medicare patients. Paper No. 2, 22nd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 2-4, 2012.

Bozic K, Lau E, Ong K, Chiu V, Kurtz S, Vail TP, Rubash HE, Berry DJ. An electronic risk calculator for early revision in Medicare THA patients. Poster No. 71, 22nd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 2-4, 2012.

Ong K, Lau E, Kurtz S. Risk of complications, revision, and cancer for metal-on-metal patients in the Medicare Population. Poster No. 41, 22nd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 2-4, 2012.

Bozic K, Lau E, Ong K, Chiu V, Kurtz S, Vail TP, Rubash HE, Berry DJ. Risk factors for early revision following primary THA in Medicare patients. Paper No. 51, 22nd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 2-4, 2012.

Bozic K, Lau E, Ong K, Chiu V, Kurtz S, Vail TP, Rubash HE, Berry DJ. An electronic risk calculator for early revision in Medicare TKA patients. Poster No. 61, 22nd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 2-4, 2012.

Higgs G, Kurtz SM, Hanzlik JA, MacDonald DW, Klein G, Parvizi J, Mont M, Kraay M, Martell J, Gilbert J, Rimnac CM. Is increased modularity associated with increased wear debris in metal-on-metal total hip arthroplasty devices? James A. Rand Award, 22nd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 1-3, 2012.

Ong KL, Lau E, Kemner JE, Kurtz SM. Comparative cost between vertebroplasty and kyphoplasty for the treatment of vertebral compression fractures. Poster No. P6, North American Spine Society 27th Annual Meeting, Dallas, TX, October 24-27, 2012.

Ong KL, Edidin A, Lau E, Kurtz SM. Mortality and morbidity for operated and nonoperated vertebral compression fracture patients in the Medicare population. Paper No. 154, North American Spine Society 27th Annual Meeting, Dallas, TX, October 24-27, 2012.

Ong KL, Edidin A, Lau E, Schmier J, Kemner JE, Kurtz SM. Cost-effectiveness analysis of treatments for vertebral compression fractures. Paper No. 27, North American Spine Society 27th Annual Meeting, Dallas, TX, October 24-27, 2012.

Kurtz SM, MacDonald D, Parvizi J; Klein GR; Lee GC; Marshall A; Mont M; Kraay K; Stulberg B, Malkani A, Rimnac R. Wear, oxidation, and mechanical properties of retrieved Crossfire and X3 HXLPE liners in THA. 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia,

October 3-6, 2012.

Higgs G, Kurtz SM, Hanzlik JA, MacDonald DW, Kane WM, Day JS, Klein G, Parvizi J, Mont M, Kraay M, Martell J, Gilbert J, Rimnac CM. Retrieval analysis of metal-on-metal total hip prostheses: Characterizing fretting and corrosion at modular interfaces. 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, October 3-6, 2012.

Kurtz SM, MacDonald D, Parvizi J; Klein GR; Lee GC; Marshall A; Mont M; Kraay K; Stulberg B, Malkani A, Rimnac R. Surface damage and oxidative properties of sequentially annealed highly crosslinked polyethylene in total knee arthroplasty. 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, October 3-6, 2012.

Ong KL, Lau E, Kemner JE, Kurtz SM. Comparative cost between vertebroplasty and kyphoplasty for the treatment of vertebral compression fractures. Poster No. PMD22, 17th Annual International Meeting of the International Society for Pharmacoeconomics and Outcomes Research, Washington, DC, June 2-6, 2012.

Kurtz S, MacDonald D, Parvizi J, Klein G, Hartzband M, Lee GC, Marshall A, Mont M, Levine H, Kraay M, Stulberg M, Rimnac C. Wear, oxidative stability, and reasons for revision of highly crosslinked polyethylenes in THA. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Higgs G, Kurtz SM, Berven S, Isaza J, Lanman T, MacDonald D, Jaekel D, Penmatsa M, Ho C, Steinbeck M. Characterization of in vivo change and histological response of retrieved PEEK rod systems for posterior lumbar stabilization and fusion. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Ho CM, MacDonald D, Penmatsa MK, Higgs G, Isaza J, Kurtz SM, Steinbeck M. Histological and retrieval analysis of PEEK spherical nucleus pulposus replacements, 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

MacDonald D, Jaekel D, Klein G, Day J, Levine H, Parvizi J, Kurtz S. Performance of dynamic knee antibiotic cement spacers in vivo. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Jaekel D, Davidson H, Hickok N, Kurtz SM. Bacterial colonization of silver composite PEEK materials. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Day J, Hanzlik J, Klein G, Levine H, Hartzband M, Parvizi J, Kraay M, Rimnac C, Kurtz S. Revision reasons and bone ingrowth in retrieved porous tantalum acetabular shells and femoral stems. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

MacDonald D, Higgs G, Parvizi J, Klein G, Hartzband M, Lee GC, Levine H, Kraay M, Rimnac C, Kurtz S. Oxidative stability, reasons for revision, and damage mechanisms of remelted highly crosslinked polyethylenes in TKA. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Kurtz SM, MacDonald D, Parvizi J, Klein G, Hartzband M, Lee GC, Marshall A, Mont M, Levine H, Kraay M, Stulberg B, Rimnac C. The impact of femoral head diameter and ceramic bearing surfaces on the wear of highly crosslinked polyethylenes in THA. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Jarman-Smith M, Brady M, Jaekel D, Kurtz SM. Characterization of an interconnected porous PEEK biomaterial with porosity suitable for osseointegration. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Conrad TL, Jaekel DJ, Kurtz SM, Roeder RK. Effects of the mold temperature on the mechanical properties and crystallinity of hydroxyapatite whisker reinforced PEEK scaffolds. 9th World Biomaterials

Congress, Chengdu, China, June 1-5, 2012.

Hanzlik J, Day J, Klein G, Levine H, Hartzband M, Parvizi J, Kraay M, Rimnac C, Kurtz S. Revision reasons and bone ingrowth in retrieved porous tantalum tibial trays and patellas, 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Edidin AA, Ong KL, Lau E, Schmier JK, Kemner JE, Kurtz SM. Cost-benefit analysis of treatments for vertebral compression fractures. Paper No. O222, SpineWeek 2012, Amsterdam, Netherlands, May 28-June 1, 2012.

Kurtz SM, Ong KL, Lau E, Greenwald AS, Bozic K. Prevalence of metal-on-metal bearings in the United States. Talk 1, Symposium on Metal-on-Metal Total Hip Replacement Devices, Phoenix, AZ, May 8, 2012.

Ong K, Lau E, Kurtz SM. Risk of complications, revision, and cancer for metal-on-metal patients in the Medicare population. Talk 6, Symposium on Metal-on-Metal Total Hip Replacement Devices, Phoenix, AZ, May 8, 2012.

Higgs G, Hanzlik JA, MacDonald DW, Kane WM, Day JS, Klein G, Parvizi J, Mont M, Kurtz SM. Fretting and corrosion at the taper connections of retrieved modular components from metal-on-metal total hip arthroplasty. Talk 13, Symposium on Metal-on-Metal Total Hip Replacement Devices, Phoenix, AZ, May 8, 2012.

Edidin AA, Ong KL, Lau E, Schmier JK, Kemner JE, Kurtz SM. Distinguished abstract: Cost-benefit analysis of treatments for vertebral compression fractures. Paper No. 6, Society of Interventional Radiology Annual Scientific Meeting, San Francisco, March 24-29, 2012.

Kurtz SM, Lau E, Watson H, Schmier J, Parvizi J. Economic burden of periprosthetic joint infection in the United States. Paper No. 212, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Kurtz SM, MacDonald D, Parvizi J, Klein G, Marshall A, Mont MA, Kraay M, Stulberg B, Rimnac CM. Oxidative and mechanical properties of highly crosslinked polyethylene in total hip arthroplasty. Paper No. 306, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

MacDonald D, Kurtz SM, Parvizi J, Klein G, Marshall A, Johnson AJ, Kraay M, Stulberg B, Rimnac CM. Retrieval analysis on the effects of head size on performance of crosslinked polyethylenes for total hip replacement. Paper No. 355, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Lovald ST, Malkani A, Lau E, Ong K, Kurtz SM, Schmier JK, Manley M. Outpatient total knee arthroplasty: A cost and outcomes analysis. Paper No. 411, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Bozic KJ, Lau E, Ong K, Kurtz SM, Vail TP, Rubash HE, Berry DJ. Identifying the high risk total knee arthroplasty patient. Paper No. 490, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Bozic KJ, Lau E, Ong K, Kurtz SM, Vail TP, Rubash HE, Berry DJ. Identifying the high risk total hip arthroplasty patient. Paper No. 570, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Bozic KJ, Lau E, Ong K, Kurtz SM, Vail TP, Rubash HE, Berry DJ. Trends in total hip arthroplasty bearing surface utilization in Medicare patients. Poster No. 100, 79th Annual Meeting of the American Academy of



Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

MacDonald D, Higgs G, Parvizi J, Klein G, Hartzband M, Levine H, Kraay MJ, Rimnac C, Kurtz SM. Surface damage and oxidative properties of remelted highly crosslinked polyethylenes in total knee arthroplasty. Poster No. 143, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Lovald ST, Lau E, Ong K, Kurtz SM, Schmier JK, Parvizi J, Bozic KJ. Cost and disease outcomes of total knee arthroplasty patients in the Medicare population. Poster 149, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Day JS, MacDonald DW, Ramsey ML, Morrey BF, Connor PM, Kurtz SM. Quantitative UHMWPE Wear Maps from Retrieved Total Elbow Arthroplasty. Poster No. 1246, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Jaekel DJ, Davidson HM, Hickok NJ, Kurtz SM. Measuring the Bacterial Adherence to Silver Composite PEEK Materials. Poster No. 912, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Jaekel DJ, Klein GR, Day JS, Levine HB, Parvizi J, Austin M, Kurtz SM. Clinical Performance of Retrieved Dynamic and Static Knee Antibiotic Cement Spacers. Poster No. 915, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Higgs GB, MacDonald DM, Jaekel DJ, Penmatsa MK, Ho CM, Lanman TH, Berven SH, Isaza

JE, Steinbeck MJ, Kurtz SM. Retrieval Analysis of PEEK Rods for Posterior Lumbar Stabilization and Fusion. Poster No. 1117, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Ho CM, Penmatsa MK, MacDonald DW, Higgs GB, Isaza J, Kurtz SM, Steinbeck MJ. Histology of Periprosthetic Tissues and Analysis of Retrieved PEEK Spherical Nucleus Pulposus Replacements. Poster No. 1118, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

MacDonald DW, Higgs G, Parvizi J, Klein G, Hartzband M, Levine H, Kraay M, Rimnac C, Kurtz SM. Material and Clinical Performance of Remelted Highly Crosslinked Polyethylene Used in Total Knee Arthroplasty. Poster No. 1999, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

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Zampini JM, Ong KL, Lau E, Edidin AA, Kurtz SM. Hospital outcomes of VCF treatment with kyphoplasty and vertebroplasty in the United States. North American Spine Society 26th Annual Meeting, Chicago, IL, November 2-5, 2011.

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Edidin AA, Ong KL, Lau E, Kurtz SM. Mortality risk for operated and non-operated vertebral fracture patients in the U.S. Medicare population. Paper No. OC40, ECCEO11-IOF European Congress on Osteoporosis and Osteoarthritis, Valencia, Spain, March 23-26, 2011.

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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. 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2-5, 2008.

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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. 1769. 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2-5, 2008.

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Kurtz SM, Rimnac CM, Bartel DL. The degradation rate of UHMWPE components. Transactions of the Orthopedic Research Society 1996; 21:492.

Kurtz SM, Bartel DL, Rimnac CM. Effects of post-irradiation aging on the stresses and strains in UHMWPE tibial components for TKR. Transactions of the 2nd Combined Meeting of the Orthopaedic Research Societies of U.S.A., Japan, Canada, and Europe 1995; p. 70.

Kurtz SM. The effects of degradation on the properties, stresses, and strains in ultra-high molecular weight polyethylene components for total hip and knee replacement. Dissertation, Cornell University, 1995.

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Kurtz SM, Rimnac CM, Li S, Bartel DL. A bilinear material model for ultra-high molecular weight polyethylene total joint replacements. Transactions of the Orthopaedic Research Society 1994; 19:289.

Kurtz SM, Bartel DL, Edidin AA. The effect of gaps on contact stress and relative motion in a metal backed acetabular component for total hip replacement. Transactions of the Orthopaedic Research Society 1994; 19:243.

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### **Selected Invited Seminars and Workshops**

Kurtz S. Are We Winning or Losing the War on Periprosthetic Joint Infection? ASTM Workshop on Antimicrobial Combination Devices. Atlanta, GA, November 2017.

Kurtz S. The Value of Explant Retrieval Analysis in Collaboration with Orthopaedic Registries. ASTM Symposium on Beyond the Implant: Retrieval Analysis Methods for Implant Surveillance. Toronto, ON, Canada, May 2017.

Kurtz S. Integration of a National Multi-Institutional Retrieval Program into Established Orthopaedic Registries in the US. The Northern Retrieval Registry Inaugural Conference. Newcastle, UK. May 2017.

Kurtz S. Advances in UHMWPE Biomaterials for Total Joint Arthroplasty. Spotlight Session, 2016 ORS Annual Meeting, Orlando, FL, March 2016.

Kurtz SM. Challenges to Meet the Rising Global Demand for Total Hip Arthroplasty. 45th Annual Meeting of the Japanese Society for Replacement Arthroplasty, Osaka, Japan, February 2016.

Kurtz S. Polyethylene Retrieval Analysis. Symposium on Articulations in Total Joint Replacement: Have We Lost Our Bearings? 2015 AAOS Annual Meeting, Las Vegas, NV, March 2015.

Kurtz S. Current Status of Technologies to Treat Periprosthetic Joint Infections. Workshop on Hot Topics in Regulatory Challenges within Orthopaedics. 2015 ORS Annual Meeting, Las Vegas, NV, March 2015.

Kurtz SM. Does taper corrosion occur with ceramic heads? Harvard Medical School, 44th Annual Advances in Arthroplasty Course. Boston, MA, USA, October 2014.

Kurtz SM. What new implant to choose after taper corrosion and taper damage? Harvard Medical School, 44th Annual Advances in Arthroplasty Course. Boston, MA, USA, October 2014.

Kurtz SM. The connection between stem and head - a new area of concern? Tribology Day, 15th EFORT

Congress, London, England, June 2014.

Kurtz SM, Paxon L, Rimnac C. The value of explant retrieval analysis in collaboration with orthopaedic registries. 3rd International Congress of Arthroplasty Registries, Boston, MA, USA, May 2014.

Kurtz SM, Lau E, Ong K. Treatment of bias in observational data. 3rd International Congress of Arthroplasty Registries, Boston, MA, USA, May 2014.

Kurtz SM. 1st and 2nd generation HXLPE hip and knee implants: Lessons from retrieval analysis; 44th Annual Meeting of the Japanese Society for Replacement Arthroplasty, Okinawa, Japan, February 2014.

Kurtz SM. Issues of multiple modularity and taper corrosion in metal-on-metal total hip arthroplasty. 44th Annual Meeting of the Japanese Society for Replacement Arthroplasty, Okinawa, Japan, February 2014.

Kurtz SM. Fretting and corrosion: Concerns and reality. EFORT Tribology Symposium, WOA Congress, Beijing, China, November 2013.

Kurtz SM. Are all stem trunnions created equal? Invited speaker, Mini-Symposium: Bearing Surface Options in THR: Where are we today? Dallas, TX, USA, November 2012.

Kurtz SM. Arthroplasty surgery - a global perspective. Invited speaker, 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, October 2012.

Kurtz S, Underwood R. Metal-on-metal hips: Device mechanics and failure modes. Orthopaedic and Rehabilitation Devices Panel Meeting of the Medical Devices Advisory Committee, U.S. Food and Drug Administration, Gaithersburg, MD, USA, June 2012.

Kurtz S. Update on clinical applications and international standards for PEEK. Invited speaker, State Food and Drug Administration (SFDA), Beijing, China, June 2012.

Kurtz S. Evolution of Polyethylene. Invited speaker, 14th International BIOLOX Symposium. Bearing Surface Options in Total Joint Replacement: The Experts Provide the Evidence. Las Vegas, NV, USA, May 2012.

Kurtz S. What are metal-on-metal retrievals really telling us? Workshop on Metal-Metal Bearings: Facts, Fictions, and Futures. 2012 ORS Annual Meeting, San Francisco, February 2012.

Kurtz S. Current trends and projected utilization of total joint replacements. Spotlight speaker, 2012 ORS Annual Meeting, San Francisco, February 2012.

Kurtz S. Articulation choices update. Invited speaker, Chinese Orthopaedic Association, Beijing, China, December 2011.

Kurtz S. Advances in PEEK Biomaterials for implant applications. Invited speaker, Medical Implants Technology Summit, Shanghai, China, September 2011.

Kurtz S. PEEK: Clinical applications of an international standard biomaterial. Invited speaker, China Medical Devices Information Network Annual Meeting, Beijing, China, January 2011.

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, 4th 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. 8th 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. 3rd 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**

- University of Tennessee, Memphis, TN
- 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