

Wanhuk Brian Choi

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EXPERIENCED COATING ENGINEER / MATERIALS SCIENTIST

Seeking a **Material Scientist / Coating Engineer** position in a research and development division. Specialized in contact and fracture mechanical properties of thermal spray coatings. **US Citizen.**

EDUCATION

STATE UNIVERSITY OF NEW YORK at STONY BROOK, Stony Brook, New York

- **Ph.D.:** Materials Science and Engineering 12/2007
 - Dissertation: Inelasticity in metallic thermal spray coatings: continuum and micromechanical approaches
- **Bachelor of Engineering:** Engineering Science (Cum Laude, GPA: 3.7/4.0) 8/2003

WORK EXPERIENCE

CENTER FOR THERMAL SPRAY RESEARCH, Stony Brook University, New York 1/2008 - present
Post-Doctoral Associate

- Parent (Base) Metal Restoration Phase II (Funded by U.S. Air Force SBIR/STTR-AF071-308): Co-PI
 - Surface restoration of damaged titanium 6-4 and Ni-based superalloy substrates via thermal spraying ceramic-metallic materials
 - Collaboration with Plasma Technology Inc. (Torrance, California)
 - Total Award: \$750,000 (Award Date: 7/2008)
- Damage Tolerant Coatings: Inelastic deformation of thermal sprayed WC-Co coatings and Correlating intrinsic coating residual stress to its performance and wear characteristics. Developed and improvised several versatile yet robust mechanical tests for metallic and ceramic coatings.
- Actively involved in Stony Brook University based Thermal Spray Technology Consortium (managing damage tolerant coating cluster). The current membership includes over twenty leading global corporations.
 - “Damage Tolerant TS Coatings: Inelastic Deformation Mechanism of HVOF WC-Co” 4/2008
 - “Indentation Based Approaches on Damage Tolerant Coatings” 10/2007
- Conducted pre-competitive joint industry field test of In-situ Coating Property (ICP) sensor for monitoring evolution of residual stresses build-up during thermal spraying WC-Co and YSZ.
 - Plasma Technology Inc., Torrance, CA 1/2008
 - Tinker Air Force Base, Oklahoma City, Ok 2/2008
 - Volvo-Aero Corp., Trollhattan, Sweden 5/2008

MESOSCRIBE TECHNOLOGIES, INC., Stony Brook, NY **Part-Time Testing Engineer** 9/2007 - present

- Dielectric properties of Ion beam deposited Diamond-Like-Carbon (DLC) coating at high and low frequency range

PRAXAIR TAFE INC., Concord, NH **Intern** 6/2006 – 10/2006

- Thermo-mechanical properties of Nanosteel coatings
- Testing coating reproducibility through thermal, elastic/inelastic, and wear analysis.

CZECH TECHNICAL INSTITUTE, Prague, Czech Republic **Intern** 6/2003 - 8/2003

- High cycle and frequency based cantilever fatigue response of wear resistant coatings
- Analysis of fatigue striation and crack propagation of WC-Co coatings

PROFESSIONAL SKILLS

Technical: Proficient in various research instruments

- **Thermal Spray Process Equipments:** Experiences in High Velocity Oxy Fuel Process: HV2000 (Praxair TAFA) & DJ-2600 (Sulzer Metco), In-Situ Coating Property (ICP) Sensor (CTSR, Stony Brook University)
- **Mechanical Analysis: Micro/Nano Instrumented Indenter** (Micromaterials LTD.), Micro-impact/fatigue tester (Micromaterials LTD.), Instron model 1000 & 8500, Interactive Instruments Tensile Frame K1-16, Pin-on-disk Friction/Wear (CETR Universal Micro Tribometer), Micro/Macro Vickers, Knoop, Brinell, Rockwell hardness testers, Dilatometer (Netzsche DIL 402)
- **Thermal Analysis:** Simultaneous Thermal Analysis (**STA, DTA, TGA**, Netzsche 440C)
- **Surface Characterization:** Scanning White Light Interferometry (Zygo New View 200), Volumetric Measurement (Quantachrome Helium Ultrapycnometer 1000), Sputter Deposition System (BOC Edwards Gold and Carbon), Scanning Electron Microscope (**SEM**, Leo 1550), Energy Dispersive Spectroscopy (**EDS**)
- **Electrical Analysis,** Electrical Resistivity (Miller Design and Equipment FPP5000 Four Point Probe)
- **Phase Analysis:** X-ray Diffraction (Philips PW1729 X-ray diffractometer)

Computer Programs: FORTRAN 90, AutoCAD 2002/2006, Sigma Plot 10, UTHSCSA Image Tool, Adobe Photoshop CS2 & Illustrator 10, Microsoft Office applications

Foreign Language: Fluent in Korean

ACADEMIC ACHIEVEMENTS

- 2003 ~ 2004 - Presidential Fellowship, Stony Brook University
- 2003 - Michael Ohr Teaching Assistantship Award for Exceptional Service
- 2003 - Undergraduate Chairman's Award
- 2002 & 2003 - Materials Science and Engineering Department Chairman's List

PROFESSIONAL MEMBERSHIP

- Thermal Spray Society (TSS) Accepted Practices Committee on Mechanical Properties
- Tau Beta Pi (New York Omicron) Engineering Honor Society
- Golden Key International Honor Society
- ASM/TMS/ACerS, Materials Research Society (MRS)

PUBLICATIONS

- **W.B. Choi, L. Prchlik, S. Sampath, A. Gouldstone.** "Indentation of Metallic and Cermet Thermal Spray Coatings", *Accepted to Journal of Thermal Spray Technology*
- **W.B. Choi, Y. Wu, S. Sampath, A. Gouldstone.** "Inelastic Deformation in Cold Sprayed Ni-5%Al Coatings: Comparison with Thermal Spray", *Accepted to Journal of Thermal Spray Technology*
- **W.B. Choi, A. Gouldstone, W. Chi, Y. Wu, Sampath S.** Mechanical, thermal and electrical properties of cold sprayed coatings. Champagne V, Helfrich D, editors. *The Cold Spray Materials Deposition Process*; Woodhead Publishing Ltd, Boca Raton, 2007
- **W.B. Choi, L. Li, V. Luzin, R. Neiser, T. Gnaupel-Herold, H. Prask, S. Sampath, A. Gouldstone.** "Integrated Characterization of Cold Sprayed Aluminum Coatings", *Acta Materialia*, 55(3), p.857-866

REFERENCES

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