

## RÉSUMÉ

### **Dr. Kantesh Balani**

Post Doctoral Researcher

EAS 3400, 10555 W Flagler St., Department of Mechanical and Materials Engineering,  
Florida International University, Miami, Florida 33174

Phone: (305) 348-1373 (o), 305-607-0272 (c) Fax: (305) 348-1932,

Email: [kbala001@fiu.edu](mailto:kbala001@fiu.edu)

### **EDUCATION**

- 2007, **Ph.D.**, Mechanical and Materials Engineering, Florida International University (FIU), Miami, Florida (CGPA **3.975/ 4.0**).
- 2002, **M.S.**, Materials Science and Engineering, University of Kentucky, Lexington, KY (CGPA **3.57/ 4.0**)
- 2001, **M.Tech.**, Metallurgical and Materials Engineering, Indian Institute of Technology (IIT), Madras, India (CGPA: **9.86/ 10.0**)
- 1999, **B. E.**, Metallurgical Engineering, PSG College of Technology, India (**83.5 %**)

### **PROFESSIONAL EXPERIENCE**

- *July 2007 onwards*: Post Doctoral Researcher, Plasma Forming Laboratory (PFL) and Nanomechanical and Nanotribology Lab (NMNTL), FIU, Miami, USA.
- *August 2003-June 2007*: Graduate Research & Teaching Assistant, FIU, Miami, FL, USA.
- *August 2001-August 2002*: Graduate Research Assistant, University of Kentucky, Lexington, KY, USA.
- *May 2000-Feb 2001*: DAAD (Deutscher Akademischer Austausch Dienst) Exchange scholar, University of Stuttgart, Germany.
- *Jul 1999-May 2000*: Half-Time Teaching Assistant, Indian Institute of Technology (IIT), Madras, India.

### **RESEARCH PUBLICATIONS (PEER-REVIEWED JOURNALS)**

1. K. Balani, and A. Agarwal, “*Wetting of Carbon Nanotube by Aluminum Oxide*”. Submitted to *Acta Materialia* (Communicated July 2007).
2. Yao Chen, Anoop Samant, Kantesh Balani, Narendra B. Dahotre, and Arvind Agarwal, “*Laser Melting of Plasma Sprayed Aluminum Oxide Coatings Reinforced with Carbon Nanotubes*”. *Journal of the American Ceramics Society* (Communicated in May 2007).
3. S. R. Bakshi, K. Balani, A. Agarwal, “*Thermal Conductivity of Plasma Sprayed Aluminum Oxide-Multiwalled Carbon Nanotube Composites*”. *Journal of the American Ceramics Society* (Accepted: Aug. 2007).
4. Yao Chen, Kantesh Balani, and Arvind Agarwal, “*Modified Eshelby Tensor Modeling For Elastic Property Prediction Of Carbon Nanotube Reinforced Ceramic Nanocomposites*”. *Applied Physics Letters*, Vol. 91, No. 1, (2007).
5. Kantesh Balani, Yao Chen, Sandip P. Harimkar, Narendra B. Dahotre, Arvind Agarwal, “*Tribological Behavior of Plasma Sprayed Carbon Nanotube Reinforced Hydroxyapatite-Coating in Physiological Solution*”. (Accepted in *Acta Biomaterialia*: June 2007) doi:10.1016/j.actbio.2007.06.001.

6. Kantesh Balani, Srinivasa Rao Bakshi, Yao Chen, Tapas Laha, Arvind Agarwal, "Role of Powder Treatment and Carbon Nanotube Dispersion in the Fracture Toughening of Plasma-Sprayed Aluminum Oxide – Carbon Nanotube Nanocomposite". Accepted in the **Journal of Nanoscience and Nanotechnology** (Mar. 2007) doi:10.1166/jnn.2007.851.
7. Srinivasa R. Bakshi, Kantesh Balani, Tapas Laha, Jorge Tercero, Arvind Agarwal, "Nano-mechanical and Nano-scratch Characterization of UHMWPE and UHMWPE- 5 wt.% MWNT coatings on a steel substrate." *Journal of Minerals, Metals, and Materials (JOM)*, July 2007, pp. 50-53.
8. S. R. Bakshi, T. Laha, K. Balani, A. Agarwal and J. Karthikeyan, "Effect Of Carrier Gas On Mechanical Properties And Fracture Behaviour Of Cold Sprayed Aluminium Coatings". **Surface Engineering**, Vol. 23, No.1, (2007), pp. 18-22.
9. Kantesh Balani, Rebecca Anderson, Tapas Laha, Melanie Andara, Jorge Tercero, Eric Crumpler and Arvind Agarwal, "Plasma-Sprayed Carbon-Nanotube Reinforced Hydroxyapatite Coatings and Their Interaction with Human Osteoblasts In Vitro", **Biomaterials**, Vol. 28, No. 4, (2007) pp 618-624.
10. V. Viswanathan, T. Laha, K. Balani, A. Agarwal, S. Seal, "Challenges and Advances in Nanocomposite Processing Techniques", **Materials Science And Engineering: R: Reports**, vol. 54, No. 5-6, (2006), pp 121-285. (with IMPACT FACTOR of **17.73** next only to Nature Materials).
11. Kantesh Balani, Gabriela Gonzalez, Arvind Agarwal, Robert Hickman, J. Scott O'Dell, and Sudipta Seal, "Synthesis, Microstructural Characterization and Mechanical Property Evaluation of Vacuum Plasma Sprayed Tantalum Carbide", **Journal of American Ceramic Society**, Vol. 89 (4), (2006), pp 1419-1425.
12. K. Balani, A. Agarwal, T. McKechnie, "Near Net Shape Fabrication via Vacuum Plasma Spray Forming", **Trans Indian Inst. Met.**, Vol. 59, No.2 April (2006), pp 237-244.
13. Kantesh Balani, Arvind Agarwal, and Narendra B. Dahotre, "Molecular Modeling of Metastable FeB<sub>49</sub> Phase Evolution in Laser Surface Engineered Coating", **Journal of Applied Physics**, Vol. 99, (2006), DOI: 10.1063/1.2172704.
14. K. Balani, A. Agarwal, S. Seal, J. Karthikeyan, "Transmission Electron Microscopy of Cold Sprayed 1100 Aluminum Coating", **Scripta Materialia**, Vol. 53 (2005), pp 845-850.
15. K. Balani, T. Laha, A. Agarwal, J. Karthikeyan, and N. Munroe, "Effect of Carrier Gases on Microstructural and Electrochemical Behavior of Cold-Sprayed 1100 Aluminum Coating". **Surface and Coatings Technology**, Vol. 195, 2-3, 31 (May 2005), pp 272-279.
16. T. Laha, K. Balani, A. Agarwal, S. Patil, S. Seal, "Synthesis of Nanostructured Aluminum Oxide Powders by Plasma Engineering". **Metallurgical and Materials Transactions A**, Vol. 36 A, 2, (Feb. 2005), 301-309.
17. Kantesh Balani, and Fuquian Yang, "Creep behavior of 90 Pb-10 Sn alloy". **Physica Status Solidi** 198, 2003, 387-394.
18. P. Gopalakrishnan, S. S. Ramakrishnan, Kantesh Balani, Amit Arora and Pranav Joshi, "Kinetic Study of Boriding Processes", **Technology**, Dec. 2000, p 20-25.

#### **ACADEMIC/ RESEARCH HONORS**

- Attended *research-proposal writing workshop* organized by **National Science Foundation**, Aug. 22-23, 2007, University of Fairbanks, Alaska, USA.

- Received “**2006-07 Dean’s Award**” for highly productive doctoral students in the College of Engineering, FIU.
- Secured **Second Place** in the **Graduate Scholarly Forum** paper presentation competition, organized by Graduate Students Organization, FIU, Spring 2007.
- **Won** a team technical quiz competition “**Materials Bowl**” during 2007 TMS (The Minerals, Metals and Materials) Annual meeting held in Orlando, Feb. 24-Mar. 1<sup>st</sup>, 2007. Overall twelve teams participated from colleges such as *Georgia Tech., Carnegie Mellon, Colorado School of Mines*, etc.
- Selected for “**National Science Foundation (NSF) Travel Scholarship**” to present a student poster during NSF Design and Manufacturing Innovation Conference at St. Louis, MO, July 24-27<sup>th</sup> 2006.
- Received “**Dissertation Year Fellowship**” to pursue doctoral research at Florida International University, 2006-07.
- Secured **First Place** in the **Graduate Scholarly Forum** paper presentation competition, organized by Graduate Students Organization, FIU, Spring 2006.
- Awarded “**Best PhD Student**” by Department of Mechanical and Materials Engineering, FIU, for maintaining best grade point average, Spring 2005.
- **Phi Kappa Phi** Honor Society Member at FIU, 2005. Phi Kappa Phi is renown for academic excellence since its membership requires *GPA greater than 3.90 on the scale of 4.0*.
- Secured **First Place** in the **Graduate Scholarly Forum** paper presentation competition, organized by Graduate Students Organization, FIU, Spring 2005.
- Received “**Best Technical Paper**” award in the *International Symposium of Research Students (ISRS)* 2004, Dec. 2004, Chennai, India.
- Recipient of **RCTF (Research Challenge Trust Fund) Fellowship** for potential and capability in research at University of Kentucky during 2001-02.
- Awarded **Deutscher Akademischer Austausch Dienst (DAAD) Scholarship**, based on merit, to pursue M. Tech. Project at Materialprüfungsanstalt (State Material Testing), University of *Stuttgart, Germany* (May2000-Feb.2001).
- Awarded **Sudharshan Bhat Memorial Prize** and **S. Ananthramakrishnan Memorial Prize** for “**Best Academic Record**” in Metallurgical Engineering branch for M.Tech. at IIT (Indian Institute of Technology) Madras, India, 2001.
- Awarded as “**Best Outgoing Student**” by Department of Metallurgical Engineering, P.S.G. College of Technology, Coimbatore, India for overall excellence in academics and sports (1999).

### **INTERNATIONAL LEADERSHIP HONORS**

- Selected by *National Phi Beta Delta Honor Society* to receive “**2007 David Merchant International Student Achievement Award**” owing to superior scholastic achievements. Annually only one international scholar is presented such a prestigious award worldwide. Among more than 150 chapters worldwide, as president of Phi Beta Delta –Zeta Alpha Chapter at FIU, I received “**Eileen M. Evans Overall Outstanding Chapter for 2006-07**”.
- **Founder, Secretary and currently Chair, Material Advantage** at FIU, 2004-07. Material Advantage at FIU has received “**Chapter of Excellence**” continuously three times in a row (2003-04, 2004-05, and 2005-06: since its inception)

competing with more than 120 chapters worldwide. Chapter has been also *winning* “**World Materials Day Contest**” in the last two years 2004-05, and 2005-06.

- **Student Advisor, Child Relief and You (CRY) America Action Center** at FIU, Miami, FL, 2006-07. CRY America at FIU is a *service organization* linked to serving under privileged children especially in India. The direct projects supported by CRY Inc. are available at [http://america.cry.org/project\\_browse.asp](http://america.cry.org/project_browse.asp).
- Nominated by Florida International University for “**Who’s Who Among Students in American Universities & Colleges**” Yearbook 2005. This elite edition circulates on the coffee-table of dignitaries around the world.
- Selected for prestigious **Arthur E. Focke LeaderShape** award for the Year 2004. One among six *selected worldwide* for the scholarship sponsored by professional **American Society of Metals** Foundation.

### **SERVICE (PROFESSIONAL AND COMMUNITY)**

- **Chair, Material Advantage** at FIU, 2006-07.
- **President, Phi Beta Delta Honor Society**, FIU, 2006-07.
- **International Peer Mentor, International Students and Scholar Services (ISSS)**, FIU, 2005-07.
- **International Student Ambassador**, FIU, 2005-06.
- **Founder and President, FIU Badminton Club**, FIU, 2003-06
- **Action Center Leader, Child Relief and You (CRY) America Action Center** at FIU, Miami, FL, 2004-07.
- **Graduate Student Representative, Indian Students Association**, FIU, 2004-07.
- **Engineering Ambassador** to the *College of Engineering* at FIU, 2003-04.
- **Member, Departmental Curriculum Committee**, Mechanical and Materials Engineering Department, FIU, Miami-FL.

### **TRAINING/MENTORING/ TUTORING**

- a. Attended two day workshop on teaching skills by the “**Academy for the Art of Teaching**”, Aug. 2004.
- b. Mentored 30 (*thirty*) international students at FIU while serving as International Peer Mentor.
- c. Currently mentoring *Mr. Anup Kumar Keshri* (post-graduate) and *Mr. Jorge Tercero* (graduate) in Mechanical and Materials Engineering since Fall 2006. Mentored *Ms. Gabriela Gonzalez* (graduate) and *Ms. Melanie Andara* (undergraduate) in Mechanical and Materials Engineering.
- d. Mentored *Mr. Dayan Paez*, an undergraduate from **MIT (Massachusetts Institute of Technology)** for summer 2005 internship.
- e. Mentored *Mr. Raul Galindo* (now undergraduate at FIU) from Coral Gables- and *Mr. Francisco Vega* from Killian Senior high school in Miami during Fall 2005.

### **CONFERENCE PROCEEDINGS, POSTER PRESENTATIONS, AND BOOK REVIEWS**

- K. Balani, T. Laha, C. Yao, S.R. Bakshi, and A. Agarwal, “**Fracture Toughening of Plasma Sprayed Aluminum Oxide –Carbon Nanotube Nanocomposite Coating**”, Gordon Conference, Andover, New Hampshire, Aug. 13-18<sup>th</sup> 2006.
- K. Balani, G. Gonzalez, A. Agarwal, R. Hickman, and S.O. Dell, “**Synthesis And Characterization Of Vacuum Plasma Sprayed Tantalum Carbide**”. **Surface**

*Engineering in Materials Science III Proceedings*, 2005 TMS Annual Meeting, San Francisco, CA, Feb 13-17, (2005), pp 241-248.

- K. Balani, A. Agarwal and T. McKechnie, “Near Net Shape Fabrication Via Vacuum Plasma Spray Forming”. **Best Technical Paper** at **International Students and Research Scholars 2004** on 20-22<sup>nd</sup> Dec. 2004, Chennai, India.
- T. Laha, K. Balani, M. Andara, A. Agarwal, and J. Haynes, “Comparison of Electrochemical Behavior of Cold Sprayed 1100 Al on 6061 Al substrate”, (Published in **International Thermal Spray Conference (ITSC), Conference Proceedings**, Japan, May 2004).
- K. Balani and A. Agarwal. Book Review: “Emerging Applications of Vacuum-Arc-Produced Plasma, Ion and Electron Beams” edited by Efim Oks and Ian Brown (Published in **Materials and Manufacturing Process**, Mercel Dekker).
- T. Laha, K. Balani, B. Potens, M. Andara, A. Agarwal, and S. Seal, “Plasma Engineered Nanostructured Spherical Ceramic Powders” **Surface and Interfaces of Nanostructured Materials Conference Proceedings**, 2004 TMS Annual Meeting, Charlotte, (March 2004), pp 103-112.
- T. Laha, K. Balani, B. Potens, M. Andara, A. Agarwal, S. Patil and S. Seal, “Plasma Engineered Nanostructured Spherical Aluminum Oxide Powders”. Poster Presentation, **Florida American Vacuum Society (AVS)**, University of Central Florida, Orlando, (March 8-12<sup>th</sup> 2004).
- T. Laha, and K. Balani, “The Electrochemical Behavior of Al-Based Nanostructured Composite Coating in Acidic Medium”. Poster presentation in **TMS 133<sup>rd</sup> Annual Meeting and Exhibition**, Charlotte, (March 2004).

#### **INTERNATIONAL TECHNICAL TALKS (2006-07)**

1. Kantesh Balani, Sandip Harimkar, Narendra Dahotre, Arvind Agarwal, “**Multi-Scale Tribology of Plasma Sprayed Carbon Nanotube Reinforced Aluminum Oxide Nanocomposite Coating**”. To be presented in **2008 TMS Annual Meeting & Exhibition**, New Orleans, LA, Mar. 9-13<sup>th</sup> 2008.
2. K. Balani, A. Agarwal, “**Plasma Sprayed Aluminum Oxide Nanocomposite Coatings Reinforced with Carbon Nanotubes: Processing, Microstructure and Mechanical Properties**”. To be presented in **32<sup>nd</sup> International Conference and Exposition on Advanced Ceramics and Composites**, Daytona Beach, FL, Jan. 27-Feb. 1<sup>st</sup> 2008.
3. Kantesh Balani, Tao Zhang, Srinivasa Bakshi, Wenzhi Li, Arvind Agarwal, “**Fracture Toughness Enhancement via Plasma Spraying of Insitu Grown CNT - Al<sub>2</sub>O<sub>3</sub> Nano-composite Coating**”. Presented at **TMS (The Minerals Metals and Materials Society) 2007 Annual Conference**, Orlando, FL, Feb. 25- Mar. 1<sup>st</sup> 2007.
4. Kantesh Balani, Dr. Rebecca Anderson, Tapas Laha, Melanie Andara, Jorge Tercero, Dr. Eric Crumpler, Prof. Arvind Agarwal, “**Biocompatibility of Plasma Sprayed Carbon Nanotube Reinforced Hydroxyapatite Bioceramic Coating**”. Presented at **ISRS (International Symposium for Research Scholars) 2006**, IIT Madras, Chennai, India, Dec. 18-20<sup>th</sup> 2006.
5. K. Balani, Y. Chen, S.R. Bakshi, T. Laha, and A. Agarwal, “**Enhanced Fracture Toughening of Plasma Sprayed Aluminum Oxide-Carbon Nanotube Ceramic Composite**”. Presented at **RAMP 2006 (Recent Advances in Materials Processing)**, Coimbatore, India, Dec. 15-16<sup>th</sup> 2006.

6. Kantesh Balani, Tapas Laha, Srinivasa R. Bakshi, Arvind Agarwal, “***CNT Dispersion in Plasma Sprayed Nano-Al<sub>2</sub>O<sub>3</sub> – CNT Nano-Composite Coating***”. *MS&T (Materials Science and Technology) 2006 Conference*, Cincinnati, OH, Oct. 15-19<sup>th</sup> 2006.
7. Kantesh Balani, R. Anderson, T. Laha, M. Andara, J. Tercero, Arvind Agarwal, E. Crumpler, “***Biocompatibility of Plasma Sprayed Hydroxyapatite-CNT Nanocomposite Coating***”. *MS&T (Materials Science and Technology) 2006 Conference*, Cincinnati, OH, Oct. 15-19<sup>th</sup> 2006.
8. K. Balani, T. Laha, R. Anderson, M. Andara, J. Tercero, E. Crumpler, A. Agarwal, “***Plasma Sprayed Bio-Ceramic Hydroxyapatite-MWNT Coating: Microstructural, Mechanical and Cell-Culture Studies***”. *ITSC (International Thermal Spray Conference)*, Seattle, Washington, May 14<sup>th</sup> -18<sup>th</sup> 2006.
9. K. Balani, T. Laha and A. Agarwal, “***Plasma Sprayed Aluminum Oxide –Carbon Nanotube Nanocomposite Coating***”. *TMS (The Minerals Metals and Materials Society) 2006 Annual Conference*, San Antonio, Texas, Mar. 12-16<sup>th</sup> 2006.

### PEER-REVIEW ACTIVITIES

Journals: Journal of American Ceramic Society (Blackwell Publishing Inc., JACerS), and Materials Characterization (Elsevier).

Books: Materials and Manufacturing Processes, Publisher Marcel and Dekker.

### REFERENCES:

#### 1. Dr. Arvind Agarwal

Graduate Program Director,  
Dept. of Mechanical and Materials Engg.,  
EC3464, 10555 W. Flagler St.,  
Florida International University,  
Miami, FL-33174  
Ph: +1-305-348-1701  
Email: [agarwala@fiu.edu](mailto:agarwala@fiu.edu)

#### 2. Dr. Kinzy Jones

Director,  
Advanced Materials Engineering Research  
Institute (AMERI)  
EC 3400, 10555 W. Flagler St.,  
Florida International University,  
Miami, FL-33174  
Ph: +1-305-348-2345  
Email: [jones@fiu.edu](mailto:jones@fiu.edu)

#### 3. Dr. B. Guha

Professor, Head  
Mechanical Testing and  
High Temperature Laboratory  
Indian Institute of Technology Madras  
Chennai-600036, India  
MSB 105C  
Ph: +91--44-257-4756  
Email: [bguha@iitm.ac.in](mailto:bguha@iitm.ac.in)