

## BIOGRAPHICAL SKETCH

### PRINCIPAL INVESTIGATOR

A.K. Balaji, Ph.D.

Associate Professor, Associate Chair, and Director of Graduate Studies,  
Dept. of Mechanical Engineering

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### A. PROFESSIONAL PREPARATION

#### Education

Sardar Patel University, India

Mechanical Engineering

BE, 1993.

University of Kentucky, USA

Mechanical Engineering

MS, 1996.

University of Kentucky, USA

Mechanical Engineering

PhD, 2000.

University of Kentucky, USA

Manufacturing

Post-doc, 03-07/2000.

### B. APPOINTMENTS

July 2011 - September 2016 Associate Chair and Director of Graduate Studies, Mechanical Engineering, University of Utah

July 2007 – present Associate Professor, Mechanical Engineering, University of Utah

Jan 2009 – June 2009 Visiting Professor, Indian Institute of Science, Bangalore, India

July 2000 – June 2007 Assistant Professor, Mechanical Engineering, University of Utah

March 2000 – July 2000 Post-doctoral Research Associate, University of Kentucky

August 1994 – Feb 2000 Graduate Research Assistant, CRMS, University of Kentucky

### C. PRODUCTS

#### Relevant Papers/Patents

**Balaji, A.K.**, and Ghatikar, V.R., *An Intelligent Multiple Metalworking/Cutting Fluid Application System for Cooling and Lubrication towards Sustainable Manufacturing*, U-4834, Provisional Patent filed (Feb 2011), PCT Final Patent Filed (February 2014).

Rakurty, C. S., Varela, P. I., & **Balaji, A. K.** (2013). Effects of targeted Minimum Quantity Fluid (MQF) application on surface integrity. *Procedia CIRP*, 8, 461–467.

Jayal, A. D., and **Balaji, A.K.** (2009). Effects of cutting fluid application on tool wear in machining: Interactions with tool-coatings and tool surface features. *Wear*, 267(9-10), 1723-1730.

Varghese, K.P., and **A.K. Balaji**, "Effects of tool material, tool topography and minimal quantity lubrication (MQL) on machining performance of compacted graphite iron (CGI)," *Int. J. Cast Metals Research*, Vol. 20(6), pp. 347-358, 2007.

A.D. Jayal, **A.K. Balaji**, R. Seseek, A Gaul, D. Lillquist, "Environmentally Conscious Machining of a Cast Aluminum Alloy: Investigation of Cutting Fluid Effects in Drilling," *Trans. NAMRI/SME*, Vol. 32, pp. 415-422, 2004.

#### Other Significant Products

**Balaji, A.K.**, W.T. Couldwell, C.L. Thomas, J.D. MacDonald, A. Lapalikar, B.C. Hansen, and B. Thakkar, *Integrated Surgical Cutting System*, US Patent **US 8,965,485 B2**, issued **Feb 24, 2015**.

K.P. Varghese and **A.K. Balaji**, "On Some Tribological Effects In Machining Of Compacted Graphite Iron (CGI)," *Proc. ASME STLE Joint Tribology Conference*, San Antonio, TX, October 23-25, 2006.

**Balaji, A.K.**, and V.S. Mohan, "An 'Effective Cutting Tool Thermal Conductivity' Based Model for Tool-Chip Contact in Machining with Multi-layer Coated Cutting Tools," *J. Machining Sc. & Tech.*, Vol. 6(3), pp. 413-434, 2002.

**Balaji, A.K.,** G. Sreeram, I.S. Jawahir and E. Lenz, "The Effects of Cutting Tool Thermal Conductivity on Tool-Chip Contact length and Cyclic Chip Formation in Machining with Grooved Tools", *Annals of the CIRP*, Vol. 48(1), pp. 33-38, 1999.

**Balaji, A.K.,** and V.S. Mohan, "On the Effects of Tool Coatings on Tool-Chip Interfacial Contact in Machining," Proc. 2nd International Conference on Tribology in Manufacturing Processes, Nyborg, Denmark, June 16-18, Vol. 1, pp. 301-308, 2004.

#### **D. SYNERGISTIC ACTIVITIES**

##### ***Awards and Honors***

- Award of Appreciation for Contribution to Manufacturing (for co-authoring keynote paper at Symp. Machining Sc. & Tech.), *ASME IMECE 1997*, Dallas, TX
- Sardar Patel University Gold Medal, 1<sup>st</sup> Rank in the University (BSME) 1993.

##### ***Service to Profession***

- Associate Technical Editor, *Journal of Machining Science and Technology* (Taylor & Francis), January 2001-June 2014.
- Symposia Organization - Co-organizer (with Dr. Ranajit Ghosh, Air Products and Chemicals, Inc.), Symposium on 'Advances in Machining of Hard Materials,' Manufacturing Engineering Division (MED), 2003 ASME International Mechanical Engineering Congress and Exposition (IMECE), November 16-21, 2003, Washington D.C.
- Editor and Publications Coordinator, *Proceedings of the CIRP International Workshop on Modeling of Machining Operations*, May 19, 1998, Atlanta, GA, USA.
- Member, Technical Committee on Manufacturing Processes, MED, ASME (2003-2010)
- Member, Technical Committee on Materials Processing, ASME (2011-present)
- Member NAMRI Scientific Committee, 2011-2014.
- Introduced and co-taught a new multi-disciplinary course on 'Engineering Sustainability' with Dr. K.S. Udell (ex-Department Chair) in Spring 2007.