

# Indrani Sen

## Assistant Professor

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### Academic Qualifications:

- **Ph.D.** (2010) in Materials Engineering from **Indian Institute of Science, Bangalore**
- **M.Tech.** (2005) in Materials Science & Engineering from **Indian Institute of Technology, Kharagpur**
- **B. Tech.** (2003) in Ceramic Technology from **College of Ceramic Technology, Calcutta University**

### Employment History (including post-doc)

Period (Year)	Name of the examination/Degree/ Post as applicable	Area of specialization/ Subjects	Name of Institute/ University/
October 2013 till date	Assistant Professor	Nanoindentation of materials Mechanical characterization including fatigue of materials In-vitro mechanical testing of biomaterials	Indian Institute of Technology, Kharagpur
November 2011- October 2013	Alexander von Humboldt Post-Doctoral Fellow	Micropillar compression and nanoindentation study on NiTi based shape memory alloys	Chemnitz University of Technology, Germany
September 2010 – October 2011	Post-Doctoral Scientist	Small scale deformation behavior of thixoformed steel and shape memory alloys	Chemnitz University of Technology, Germany
March 2010 –	Research Associate	Micromechanisms of	Indian Institute of

September 2010		deformation for bulk metallic glass matrix composite, Steels and Titanium alloys	Science, Bangalore
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### **Awards and Recognitions**

- i) Alexander von Humboldt Fellowship for Post-doctoral Research by Alexander von Humboldt Foundation, January 2012 – August 2013.
- ii) Humboldt Language Fellowship for German language by Alexander von Humboldt Foundation, November – December 2011.
- iii) Institute Fellowship by Ministry of Human Resource and Development (MHRD), India for pursuing Ph.D. at Indian Institute of Science, Bangalore, 2009-2010.
- iv) National Doctoral Fellowship by All India Council for Technical Education (AICTE), 2006-2009.
- v) Best Presentation Award in the 20<sup>th</sup> Annual Student Symposium on Metallurgical and Materials Research, Indian Institute of Science, Bangalore, 2007.
- vi) Institute Silver Medal by Indian Institute of Technology Kharagpur, for securing first rank in M-Tech., 2005.
- vii) Late Jagmohan Singh Memorial Cash Prize, by Indian Institute of Technology Kharagpur, 2005.
- viii) Institute Fellowship by Ministry of Human Resource and Development (MHRD), India for pursuing M-Tech at Indian Institute of Technology Kharagpur, 2003-2005.
- ix) National Scholarship Certificate after 10<sup>th</sup> standard Examination.

### **Publication list (chronological order) in Refereed International Journal; h index: 10**

1. **Indrani Sen**, S. Tamirisakandala, D.B. Miracle and U. Ramamurty, “Microstructural effects on the mechanical behavior of B-modified Ti-6Al-4V alloys”, *Acta Materialia*, 55, pp. 4983–4993, (2007).
2. **Indrani Sen**, L. Maheswari, S. Tamirisakandala, D.B. Miracle and U. Ramamurty, “Micromechanisms of damage in a hypereutectic Ti-6Al-4V-B alloy”, *Materials Science and Engineering A*, 518, pp. 162-166, (2009).

3. **Indrani Sen** and U. Ramamurty, "Elastic Modulus of Ti-6Al-4V-xB alloys with B up to 0.55 wt.%", *Scripta Materialia*, 62, pp. 37-40, (2010).
4. K.K. Alaneme, S.M. Hong, **Indrani Sen**, E. Fleury, and U. Ramamurty, "Effect of copper addition on the fracture and fatigue crack growth behaviour of solution heat-treated SUS 304H austenitic steel", *Materials Science and Engineering A*, 527, pp. 4600-4604, (2010).
5. R.L. Narayan, K. Boopathy, **Indrani Sen**, D.C. Hofmann and U. Ramamurty, "On the hardness and elastic modulus of BMG matrix composites", *Scripta Materialia*, 63, pp. 768-771, (2010).
6. **Indrani Sen**, R.S. Kottada and U. Ramamurty, "High temperature deformation processing maps for boron modified Ti-6Al-4V alloys", *Materials Science and Engineering A*, 527, pp. 6157-6165, (2010).
7. **Indrani Sen**, "Mechanical properties of B modified Ti-6Al-4V alloys", *Journal of Physics: conference series*, 240, pp. 012039, (2010).
8. **Indrani Sen** and U. Ramamurty, "High temperature (1023 K to 1273 K [750 °C to 1000 °C]) plastic deformation behaviour of B-modified Ti-6Al-4V alloys: temperature and strain rate effects", *Metallurgical and Materials Transactions A*, 41, pp. 2959-2969, (2010).
9. **Indrani Sen**, K. Gopinath, R. Datta and U. Ramamurty, "Fatigue in Ti-6Al-4V-B alloys", *Acta Materialia*, 58, pp. 6799-6809, (2010).
10. **Indrani Sen**, K. E. Amankwah, N. Santosh Kumar, E. Fleury, K. Oh-ishi, K. Hono, U. Ramamurty, "Microstructures and mechanical properties of annealed SUS 304H austenitic stainless steel with copper", *Materials Science and Engineering A*, 528, pp. 4491-4499, (2011).
11. P.S. Singh, R.L. Narayan, **Indrani Sen**, D.C. Hofmann and U. Ramamurty, "Effect of strain rate and temperature on deformation behavior of bulk metallic glass composites", *Materials Science and Engineering A*, 534, pp. 476-484, (2011).
12. **Indrani Sen**, G. Karthikeyan, J. Ramkumar and R. Balasubramaniam, "A study on machinability of B-modified Ti-6Al-4V alloys by EDM", *Materials and Manufacturing Processes*, 27, pp. 348-354, (2012).
13. Gaurav Singh, **Indrani Sen**, K. Gopinath and U. Ramamurty, "Influence of minor additions of B on tensile and fatigue properties of wrought Ti-6Al-4V alloys", *Materials Science and Engineering A*, 540, pp. 142-151, (2012).
14. **Indrani Sen**, Hana Jirková, Bohuslav Mašek, Marcus Böhme and Martin F.-X. Wagner, "Microstructure and mechanical behavior of a mini-thixoformed tool steel", *Metallurgical and Materials Transactions A* (2012), 43, pp. 3034-3038 (2012).

15. Hana Jirková, David Aisman, **Indrani Sen**, Martin F.-X. Wagner, Maria Behulova, Martin Kusy and Bohuslav Mašek, “Mini-thixoforming of a steel produced by powder metallurgy”, **Solid State Phenomena**, Vols. 192-193, pp. 500-505 (2012).

### **Publication list (chronological order) in Proceedings of International Conferences**

16. **Indrani Sen**, S. Ram and S.B. Yadav, “Microstructure and optical properties of mesoporous  $Al_2O_3$  composites with dispersed gold metal Nanoparticles,” in *Proceedings of International Symposium on Advanced Materials And Processing*, I.I.T., Kharagpur, India, pp. 1440-1444, (2004).
17. **Indrani Sen** and U. Ramamurty “Mechanical behavior of B modified Ti-6Al-4V alloys,” in *Proceedings of the 11<sup>th</sup> World Conference on Titanium (Ti-2007)*. Edited by Ninomi et al. The Japan Institute of Metals, Kyoto, Japan, pp. 745-748, (2007).
18. **Indrani Sen** and U. Ramamurty “Effect of microstructure on the mechanical behavior of B modified Ti-6Al-4V alloys” in *Supplemental Proceedings: Volume 1: Fabrication, Materials, Processing and Properties, TMS (The Minerals, Metals & Materials Society)*, San Francisco, USA, pp. 49-53, (2009).
19. Lakhindra Marandi and **Indrani Sen**, “Mechanical behavior of steel wire in corrosive atmosphere and fatigue studies”, *Proceedings of 7th International Conference on Creep, Fatigue and Creep-Fatigue interaction-CF-7* (2016). pp. 1168-1173.

### **Papers presented in Conferences but not published**

S.No.	Author(s)	Year	Title	Presenting Author/Publisher
20.	<b>Indrani Sen</b> , J. Pftzing-Micklich and Martin F.-X. Wagner	2011	Orientation dependent martensitic transformation in pseudoelastic NiTi	<b>Indrani Sen</b> presented at European Congress and Exhibition on Advanced Materials and Processes (EUROMAT 2011) held at Montpellier, France, September 2011.
21.	<b>Indrani Sen</b> and Martin F.-X. Wagner	2012	Effect of indentation depth and displacement rate on spherical nanoindentation of NiTi shape memory alloys	<b>Indrani Sen</b> presented at TMS 2012 held at Orlando, Florida, USA, March, 2012.
22.	<b>Indrani Sen</b> , Martin F.-X. Wagner, R. Raghavan and J. Michler	2012	Small-scale transformation behavior of pseudoelastic NiTi under uni- and multi-axial loading	<b>Indrani Sen</b> , presented at 4 <sup>th</sup> International Conference on Smart Materials Structures systems (CIMTEC 2012) held at Montecatini Terme, Italy, June 10-14, 2012.
23.	<b>Indrani Sen</b> and Martin F.-X. Wagner	2012	Nanoindentation study of NiTi shape memory alloys	<b>Indrani Sen</b> , presented at 16 <sup>th</sup> International Conference on Strength of Materials (ICSMA 16) held at Bengaluru, India, August, 2012.

24.	<b>Indrani Sen,</b> Martin F.-X. Wagner, R. Raghavan and J. Michler	2012	Micro-pillar compression and nanoindentation of NiTi shape memory alloys	<b>Indrani Sen,</b> presented at 9 <sup>th</sup> European Symposium on Martensitic Transformations (ESOMAT 2012) held at Saint Petersburg, Russia, September, 2012.
25.	<b>Indrani Sen</b> and Martin F.-X. Wagner	2013	The potential and limitations of nanoindentation for pseudoelastic characterization of NiTi shape memory alloys	<b>Indrani Sen,</b> presented at Shape Memory and Superelastic Technologies (SMST 2013) held at Prague, Czech Republic, May 2013.

**Review Service for the following journals**

- Acta Materialia
- Materials Science and Engineering A
- Metallurgical and Materials Transactions A
- Nature open Access Journal
- Materials Characterization
- Defence Science Journal (DRDO)
- Journal of Materials Research
- Journal of Materials Engineering and Performance
- Materials Science Forums
- Transactions of the Indian Institute of Metals
- Bulletin of Materials Science
- Sadhana- Academy Proceedings in Engineering Science