

Name

Dr Krishna Valleti

Designation

Scientist **D**

Qualification

PhD in Physics (*Thin films*) – Dept. of Physics, IIT Madras

Research areas of interest

- * Thin film technology: Physical Vapor Deposition
 - Sputtering and Magnetron Sputtering (DC, Pulsed and RF)
 - Cathodic Arc deposition
 - Electron Beam Evaporation
 - Cathodes designing
- * Interfacial studies: Multi-layer, Gradient
- * Tribological behaviour of thin films
- * High temperature stable thin films
- * Super hard thin films: Nano & Nanocomposite materials
- * Functional thin films: Thermal barrier, solar selective, Aesthetic, Electrical and Optical films/coatings

List of journal publications

- 1) “Effect of microstructure and phase constitution on mechanical properties of $Ti_{1-x}Al_xN$ coatings” *Applied Surface Science* 313 (2014): 936
- 2) “Functional multi-layer nitride coatings for high temperature solar selective applications” *Solar Energy Materials and Solar cells* 121 (2014): 14
- 3) “Characterization of multilayer nitride coatings by electron microscopy and modulus mapping” *Materials Characterization* 81 (2013): 7
- 4) “Factors influencing properties of CrN thin films grown by cylindrical cathodic arc physical vapor deposition on HSS substrates” *Material Science and Engineering A* 545 (2012): 155
- 5) “Structure-property correlations in cathodic arc deposited TiAlN coatings” *Material Science Forum* 702-703 (2012): 967.

- 6) "Influence of substrate temperature and bias voltage on properties of chromium nitride thinfilms deposited by cylindrical cathodic arc deposition" *Journal of Vacuum Science and Technology A* 29 (2011): 051515.
- 7) "Processing – Structure – Property relationships in electron beam physical vapor deposited yttria stabilized zirconia coatings" *Journal of Vacuum science and Technology A* 29 (2011):031501-1
- 8) "Studies on hard TaN thin film deposition by R C-Mag technique" *Journal of Vacuum Science and Technology A* 27 (2009): 626.
- 9) "Studies on phase dependent mechanical properties of DC magnetron sputtered TaN thinfilms: Evaluation of super hardness in orthorhombic Ta₄N phase" *Journal of Physics D: Applied Physics* 41 (2008): 045409.
- 10) "Growth of nanocrystalline near α -phase Tantalum thin films at room temperature using cylindrical magnetron cathode" *Surface & Coatings Technology* 202 (2008): 3325.
- 11) "The effect of arc suppression on the physical properties of Low temperature DC magnetron sputtered tantalum thin films" *Journal of Vacuum Science and Technology A* 25 (2007):378.
- 12) "Pulsed DC magnetron sputtered tantalum nitride hard coatings for tribological applications" *Surface & Coatings Technology* 201 (2006): 4401.

List of patents

- 1) "An improved solar selective multi-layer coating and a method of depositing the same" application No. 1567/DEL/2012, May 22nd 2012.
- 2) "Improved cylindrical magnetron cathode and a process for depositing thin films on surfaces using the said cathode" application No. 21/DEL/2008, January 3rd 2008.

Conference proceedings

- 1) "Influence of Composition and Architecture on Mechanical Properties of Cathodic Arc Deposited Ti-Al-N Coatings" 40th ICMCTF Conference, April 29th - 3rd May 2013, San Diego, U.S.A.
- 2) "Nanostructured Nitride Coatings for Improved Wear and Corrosion Resistance" International Conference on Nanoscience and Nanotechnology (ICONSAT 2012), Jan 21st -23rd 2012, Hyderabad, India

- 3) “Implementation of C-CAPVD grown refractory metal nitride coatings for solar thermal applications” International Conference on Nanoscience and Technology 2012, January 20 – January 23, Hyderabad, India.
- 4) “Studies on pulsed rotating cylindrical magnetron sputtered tantalum thin films” 50th Annual Society of Vacuum Coaters (SVC) Technical Conference, April 28- May 3, 2007, Louisville, Kentucky, USA. “Received Best poster Award”
- 5) “Effect of grain size on mechanical properties of Pulsed DC magnetron sputtered Tantalum thin films” Eighth International Conference on Nanostructured Materials, August 20-25, 2006, IISc Bangalore, INDIA.
- 6) “Studies on Pulsed DC magnetron sputtered Tantalum thin films for hard coating applications: Effect of substrate temperature” 5th international surface engineering congress during May 15-17, 2006, Seattle, Washington, USA.

Affiliation to Professional Societies

- 1) American Vacuum Society (AVS)
- 2) Society of Vacuum Coaters (SVC)
- 3) MRSI

Contact Information

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