

**MOHAMED EL MANSORI**

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**BIOGRAPHY**

Mohamed EL MANSORI, 42 years, is a Full Professor in the Department of Mechanical, Material Science and Manufacturing Engineering at the Arts et Métiers ParisTech (www.msmp.eu). He served as Deputy General Director in Charge of Research & Innovation of Arts et Métiers ParisTech (www.ensam.eu), France. He also chaired the Mechanical Engineering and Manufacturing Research Group (LMPF-EA4106).

He received his B.Sc. in Physics from the University of Hassan II in 1993 (Casablanca, Morocco), and his Ph.D. in Mechanical Engineering from the Institut National Polytechnique de Lorraine in 1997 at Nancy, France. He also served as a postdoctoral appointee at the Center for Advanced Friction Studies in the Southern Illinois University, USA. In addition, he served as a Research Member in the ERMES Group (Nancy, France) for five years on the tribological behavior of engineering materials, especially under the influence of electro-magnetic environment.

**RESEARCH INTERESTS**

His research interests include the interface of thermo-mechanics characteristics of material and physics behind the tribological performances of both metallic and composite materials. The research activities carried out within the last decade are interdisciplinary by their very nature. They have engulfed to the problems concerning the tribological characteristics of engineering systems and multiscale advanced manufacturing processes. These activities have led to the creation of a team who conceived and developed the concept of multiscale process signature in conjunction with a new tribo-energetic approach for the fundamental understanding of advanced and sustainable manufacturing processes. The interests of this approach are in its capability to "bridge the gap" between the traditional approach of academia and the industrial requirements. This result in a **strong publication record**: more than **100 papers in JCR** referenced international journals and more than **150 publications** in international and national conference proceedings.

**EDUCATION**

**Master's** : M.Sc. (DEA) in Mechanics and Thermodynamics from Institut National Polytechnique de Lorraine, France, 1994.

**Doctorate** : Ph.D in Mechanical Engineering – Tribological study of electrical and magnetic sliding contacts - from Institut National Polytechnique de Lorraine, France, 1997.

**HDR** : “Habilitation à Diriger les Recherches“ from Institut National Polytechnique de Lorraine, France, 2004. (*French degree required to supervise PhD students, manage Research Programs and apply for professorships*)

<b>EMPLOYMENT</b>
<p><b>2005-Present</b> : Professor (Mechanical &amp; Manufacturing Engineering) at Ecole Nationale Supérieure des Arts et Métiers ( Arts et Métiers ParisTech), France.</p>
<p><b>2000/2005</b> : Assistant Professor (Mechanical &amp; Manufacturing Engineering) at Ecole Nationale Supérieure des Arts et Métiers, Châlons-en-Champagne, France.</p>
<p><b>1999/2000</b> : Post-Doctoral Fellow in Center for Advanced Friction Studies, Southern Illinois University, Carbondale, USA.</p>
<p><b>1998/1999</b> : Post-Doctoral Fellow in ERMES Team of Laboratoire de Physique et Mécanique des Matériaux (CNRS-UMR7554), Nancy, France.</p>
<p><b>1997/1998</b> : Temporary Lecturer of Mechanical Engineering at Ecole Supérieure des Sciences et Technologies de l'Ingénieur in Nancy, France.</p>
<p><b>1996/1997</b> : Temporary Lecturer of Mechanical Engineering at Ecole Nationale Supérieure d'Electricité et de Mécanique in Nancy, France.</p>
<b>ON-GOING RESEARCH PROJECTS</b>
<p><b>Competitive manufacturing of Cast Ausferritic Ductile Iron.</b> This research program is conducted in partnership with industry: Technologica Company, Renault, Foundry of Abilly, CRITT-MDTS of Charleville- Mezieres. The total project budget was 1,213,000 € (542,000 € for MSMP- ENSAM Châlons-en-Champagne).</p>
<p><b>Low Pressure Sand Casting of Light Alloys Project / PFMI INOVSYS</b> is in strong partnership with Airbus Helicopters. The total budget is about 2,500,000 € (2,000,000 € in investment over the period 2012/2014 for MSMP - ENSAM Aix-en-Provence). This program allows the acquisition of the low pressure casting process for aluminum and magnesium &amp; 3D printing sand molds.</p>
<p><b>FUI Program/"Innovative Casting Magnesium Design Rules"</b> of the PEGASE cluster whose budget amounts is € 2 million (350,000 € for MSMP - ENSAM Low Cast platform) for the period 2014/2016. Industrial partners are: Helicopters Airbus, Danielson Engineering, ESI Group and Foundries du Midi.</p>
<p><b>Engine Finishing Technologies Research &amp; Innovation</b> Program in partnership with Renault since May 2007. This is the one platform fully dedicated for the research &amp; innovation in finishing production processes (CNC Industrial Honing Machine, Belt finishing...) with multiscale metrology guaranteeing during machining phase and then in control phase, robust low engine emission production. The scientific scope is to design economic and ecological finishing technologies of mobile parts for the propulsion power engine based on the integrated multiscale manufacturing approach.</p>
<b>PUBLICATIONS (selected recent papers)</b>
<p>Demirci I., Mezghani S., Yousfi M., <b>El Mansori M.</b> <i>Multiscale analysis of the roughness effect on lubricated rough contact.</i> <b>Journal of Tribology</b>, 136 (1), <b>2014</b>, art. N° 011501.</p>
<p>Meena A., <b>El Mansori M.</b> <i>Specific cutting force, tool wear and chip morphology characteristics during dry drilling of austempered ductile iron (ADI).</i> <b>International Journal of Advanced</b></p>

**Manufacturing Technology**, 69(9-12), **2013**, pp. 2833-2841.

Mezghani S., Demirci I., **El Mansori M.**, Zahouani H. *Energy efficiency optimization of engine by frictional reduction of functional surfaces of cylinder ring-pack system.* **Tribology International**, 59, **2013**, pp. 240-247.

Goedel B., **El Mansori M.**, Dumur D. *Simulation of roughness and surface texture evolution at macroscopic scale during cylinder honing process.* **Procedia CIRP**, 8, **2013**, pp. 27-32.

Mkaddem A., Benabou A., **El Mansori M.**, Clénet S. *Analytical modeling to predict the cutting behavior of ferromagnetic steels: A coupled magnetic-mechanical approach.* **International Journal of Solids and Structures**, 50 (13), **2013**, pp. 2078-2086.

Mezghani S., Demirci I., Yousfi M., **El Mansori M.** *Mutual influence of crosshatch angle and superficial roughness of honed surfaces on friction in ring-pack tribo-system.* **Tribology International**, 66, **2013**, pp. 54-59.

Goedel B., Voisin J., Dumur D., **El Mansori M.**, Frabolot M. *Flexible right sized honing technology for fast engine finishing.* **CIRP Annals - Manufacturing Technology**, 62 (1), **2013**, pp. 327-330.

Mezghani S., Demirci I., Yousfi M., **El Mansori M.** *Running-in wear modeling of honed surface for combustion engine cylinder liners.* **Wear**, 302 (1-2), **2013**, pp. 1360-1369.

**El Mansori M.**, Mezghani S., Zahouani H., Divo F. *Biomimetic touch perception of edge finish of ophthalmic lens.* **Wear**, 301 (1-2), **2013**, pp. 362-369.

Zitoune R., **El Mansori M.**, Krishnaraj V. *Tribo-functional design of double cone drill implications in tool wear during drilling of copper mesh/CFRP/woven ply.* **Wear**, 302 (1-2), **2013**, pp. 1560-1567.

Fouilland L., **El Mansori M.** *Experimental study of the brittle-ductile transition in hot cutting of SG iron specimens.* **Journal of Materials Processing Technology**, 213 (2), **2013**, pp. 201-213.

Soussia A.B., Mkaddem A., **El Mansori M.** *Effect of coating type on dry cutting of glass/epoxy composite.* **Surface and Coatings Technology**, 215, **2013**, pp. 413-420.

Meena A., **El Mansori M.** *Material characterization of austempered ductile iron (ADI) produced by a sustainable continuous casting-heat treatment process.* **Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science**, 43 (12), **2012**, pp. 4755-4766.

Abdel-Aal H.A., Vargiolu R., Zahouani H., **El Mansori M.** *Preliminary investigation of the frictional response of reptilian shed skin.* **Wear**, 290-291, **2012**, pp. 51-60.

## AWARDS

Professor EL MANSORI has been an invited speaker to several conferences and has taught short courses on tribology in the multiscale manufacturing process. His **strong international exposure** can be assessed by the invitation from The Royal Society on their scientific meetings, which are considered as high-level international discussions of emerging science.

- **Best Paper Award, WOM Conference, 2013, USA:** Zahouani H., Mezghani S., Vargiolu

R., Hoc T., **El Mansori M.** *Effect of roughness on vibration of human finger during a friction test. 19th International Conference on Wear of Materials*, Portland, Oregon, USA, 14-18 April 2013.

- **El Mansori M.**, Multiscale Computation of Honing Signatures in Functionalized Auto Engine Bores, **Research Fellows International Scientific Seminar on "Functional Structured Surfaces"**, The Kavli Royal Society International Center, 22-23 November 2010, UK.
- **Member of the Editorial Board** of the International Journal - *Surface Topography: Metrology and Properties*, IOPScience.
- **Associate Visiting Professor** (Since September 2009) in Functional Surfaces Research Group headed by Prof. B.G. ROSEN, Halmstad University and Chalmers University of Technology, Sweden.
- **Member of the International Program Committee** of the "*Met & Props*" group's work leading the International Conference on Metrology and Properties of Engineering Surfaces.
- **Organizing Chair** (With Prof. I. Chastel, CEMEF, Mines ParisTech) of the 2010 edition of the International Conference « Advances in Materials and Processing Technologies-AMPT 2010 ». Conference held from October 24th to 27th, 2010 in Arts et Métiers ParisTech, Paris, France ([www.ampt2010.org](http://www.ampt2010.org)).
- **Chairman** of the Second International Meeting of Abrasion (May 9-10, **2006**, Châlons-en-Champagne) organized by the LMPF group and sponsored by RENAULT. I was the co-founder, along with Professor H. Zahouani (LTDS- UMR 5513, Ecole Centrale de Lyon), of the first edition of this international forum at Saint-Etienne, May 2004. A selection of papers was published in the Journal of Engineering Manufacture – Part B (Proceedings of the Institution of Mechanical Engineers).
- **Co-organized** two invited symposiums with Prof. Abdel-Aal :
  - (a) *New Frontiers in Modeling and Simulation of Composite and Metallic Field Machining*, International Conference of Computational Methods in Sciences and Engineering (ICCMSE 2009), Rhodes, Greece, 29 September au 04 October (2009).
  - (b) *Tribology "ART" vs "SCIENCE": Toward thermodynamics based formulation of tribo-systems*, 2<sup>nd</sup> edition of European Conference on Tribology (ECOTRIB 2009), Pisa, Italy, June 7-10 (2009).