

## Osama Ahmed Mohamed Abdelaal, Ph.D.

### PERSONAL DETAILS

Position : Assistant Professor  
Date & Place of Birth : July 02, 1983, Assiut, Egypt  
Gender : Male  
Marital Status : Married  
Citizenship : Egyptian  
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### EDUCATION

- Title of Qualification Awarded : **Ph.D.** in Industrial Engineering and Systems Management, February 2014, Egypt-Japan University of Science and Technology-(E-JUST), Alexandria, Egypt, through joint supervision with Tokyo Institute of Technology, Japan
- Ph.D. Thesis title : "Development of Innovative Hip Implant Using Functionally Graded Auxetic Structures"
- Title of Qualification Awarded : **M.Sc.** in Mechanical Engineering, December 2009, Assiut University, Egypt
- M.Sc. Thesis title : "Influence of Journal Groove Geometry on the Performance of Oil- Lubricated Grooved Journal Bearings".
- Title of Qualification Awarded : **B.Sc.** in Mechanical Engineering, June 2005, Assiut University, Egypt
- B.Sc. Thesis Title : "A Reverse Engineering of a Mechanical Press Using Computer- Aided Design and Engineering (CAD/CAE)"

### EMPLOYMENT

- Assistant Professor Mechanical and Industrial Engineering Department, College of Engineering, Majmaah University, Majmaah 11952, Kingdom of Saudi Arabia. (February 2017- Present).
- Post-Doctoral Fellow Department of Material Science (Lehrstuhl für Werkstoffkunde: LWK), Paderborn University, Germany (April 2016 – Sept 2016). Project title" Additive Manufacturing and Characterization of Graded Porosity Lattice Structures".

- Assistant Professor Mechanical Engineering Department, Faculty of Engineering, Assiut University, Egypt (April 2014 - Present)
- Assistant Lecturer Mechanical Engineering Department, Faculty of Engineering, Assiut University, Egypt (Jan. 2010 - April 2014)
- Teaching and research assistant Mechanical Engineering Department, Faculty of Engineering, Assiut University, Egypt (Jan. 2006 - Jan. 2010)

## RESEARCH AREAS

- Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), Computer Aided Engineering (CAE), Reverse Engineering (RE), 3D Printing/Additive manufacturing, Auxetic materials, and Lattice structures.
- Custom design and manufacturing of biomedical implants, Prostheses, Tissue Engineering scaffolds and medical devices.

## PUBLICATIONS

### 1). Publications in Peer-Reviewed Journals

1. **Osama Abdelaal**, Saied Darwish, Khaled Abd Elmougoud, Saleh Aldahash "A new methodology for design and manufacturing of a customized silicone partial foot prosthesis using indirect additive manufacturing", accepted, The International Journal of Artificial Organs, doi: 10.1177/0391398819847682
2. **Osama Abdelaal**, Saied Darwish, Hassan El-Hofy, Yoshio Saito "Patient-specific design process and evaluation of a hip prosthesis femoral stem", The International Journal of Artificial Organs, Dec. 2018, doi:10.1177/0391398818815479.
3. Mohamed Adel, **Osama Abdelaal**, Abdelrasoul Gad, Abu Bakr Nasr, AboelMakaram Khalil, "Polishing of fused deposition modeling products by hot air jet: Evaluation of surface roughness", Journal of Materials Processing Technology, Vol. 251: pp. 73-82, 2018.
4. M. Adel, **Osama Abdelaal**, Abdelrasoul Gad, Abu Bakr Naser, Aboel Makaram Khalil, "Enhancing the surface roughness of fused deposition modeling products", Journal of Engineering Sciences, Vol. 45, No. 3, pp. 324 – 332, May 2017.
5. Hend Mostafa, **Osama Abdelaal**, Wael Khier and AboelMakaram Khalil, "Patient Specific Finite Element Modeling of Human Vertebra", European Journal of Advances in Engineering and Technology, Vol. 4, No. 11, pp. 807-813, 2017.
6. **Osama A. M. Abdelaal** and Saied M. H. Darwish, "Analysis, Fabrication and a Biomedical Application of Auxetic Cellular Structures," Int J of Engineering and Innovative Technology, Vol. 2, No. 3, September 2012.
7. **Osama A. M. Abdelaal**, Khalil, A. A., Nasr, A. A. "Characteristics of Oil-Lubricated Partially Herringbone Grooved Journal Bearing", Journal of Engineering Sciences, Vol. 37, No. 4, PP.925-942, Assiut University, July 2009.

## **2). Book Chapters**

1. **Osama Abdelaal** and Saied Darwish," Review of Rapid Prototyping Techniques for Tissue Engineering Scaffolds Fabrication," in: A. Öchsner et al. (eds.), Characterization and Development of Biosystems and Biomaterials, Advanced Structured Materials 29, Springer- Verlag Berlin Heidelberg, 2013.

## **3). Conference Papers**

1. Ibrahim Eldesouky, **Osama Abdelaal**, Hassan El-Hofy," Femoral Hip Stem with Additively Manufactured Cellular Structures," Proceedings of the 2014 IEEE Conference on Biomedical Engineering and Sciences ", Miri, Sarawak, Malaysia, December 2014.
2. **Osama Abdelaal**, Jiang Zhu, Tomohisa Tanaka, Saied Darwish, Yoshio Saito," Additive manufacturing of custom-made hip implants," Proceedings of The Japan Society of Mechanical Engineers (JSME), Manufacturing Systems Division Conference 2013, Chuo University, Tokyo, Japan, 2013.
3. **Osama Abdelaal**, Saied Darwish, Yoshio Saito, Tomohisa Tanaka, Jiang Zhu" An integrated approach for design and fabrication of Patient Specific hip prosthesis, " Proceedings of the 33rd Bio-Tribology Symposium, Kitasato University, Kanagawa, Japan March 16, 2013.

## **FUNDED RESEARCH PROJECTS**

Principal Investigator of a research project entitled: "Development of Improved Fused Deposition Modeling Nozzle System". Funded by STDF Research Support & Technology Development Grant (RSTDG), Egypt, (2015-2017) (Project ID: 12612).

## **REVIEWING IN A PEER-REVIEWED PROCESS**

1. Reviewer of the Arabic translation of the book " H-POINT: The Fundamentals of Car Design and Packaging", By Stuart Macey and Geoff Wardle translated by the translation center at King Saud University, Riyadh, Saudi Arabia, 2016.
2. Reviewer for Scientific Reports Journal, published by the Nature Publishing Group, 2014 Impact Factor is 5.578, 2017.
3. Reviewer for Proceedings for the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine, published by the SAGE Publications, 2016 Impact Factor is 0.996.

## **AWARDS AND SCHOLARSHIPS**

- DAAD - German Egyptian Research Short term Post- Doctoral Scholarship (GERSS) : (Apr.2016- Sept. 2016)
- Governmental Mission, full funded Scholarship by the Egyptian Ministry of Higher Education to obtain PhD from the Egypt-Japan University of : (Feb. 2011- Feb. 2014)

- Science and Technology, Egypt and Tokyo Institute of Technology, Japan.
- Mitsubishi Corporation research grant at Egypt-Japan University of Science and Technology, Alexandria, Egypt. : (Aug. 2010- Feb. 2011)
  - Certificate of Excellence from head of Assiut Engineers syndicate due to my excellence during my undergraduate studies. : 2007
  - Top Student Award in Mechanical Engineering, Egypt Engineering Syndicate : 2005
  - Prof. Dr. Fathi Abdallah Abd-Elhafiz Award in Machine Design, Assiut University. : 2004

## SUPERVISORY EXPERIENCE

### 1). Graduate level

1. Co-supervisor of Mohamed Adel (M.Sc. candidate, Mechanical Engineering department, Assiut University: "Enhancing of surface roughness of FDM products via hot air". Finished
2. Co-supervisor of Hend Abd El-Hafiz (M.Sc. candidate, Mechanical Engineering department, Assiut University: "Design and analysis of customized auxetic spinal implant". September 2014 – Present.

### 2). Undergraduate level

1. 4th year Production Engineering Students, Assiut University, " Design and Manufacturing of a Solar Photovoltaic Street Lighting System in Egypt", 2015.
2. 4th year Mechatronics Engineering Students, Assiut University, " Design and Manufacturing of a CNC Plasma Cutting Machine", 2015

## TEACHING EXPERIENCE

### 1). Undergraduate level

- Fundamentals of Engineering Drawing : Majmaah University, Saudi Arabia
- Engineering Mechanics (Statics) : Majmaah University, Saudi Arabia
- Tribology : Assiut University, Egypt
- Engineering metrology : Majmaah University, Saudi Arabia
- Engineering statistics and Quality control : Assiut University, Egypt
- Design of machinery : Al Azhar University, Egypt
- Production engineering : Al Azhar University, Egypt
- Metal forming theory and it's applications : Sohag University, Egypt
- CAD, CNC : Sohag University, Egypt

- Engineering materials and it's applications : Assiut University, Egypt
- Theory of metal cutting : Assiut University, Egypt
- Machine drawing and construction : Assiut University, Egypt
- mechanical engineering laboratories : Assiut University, Egypt

### 2). Graduate level

- Design of machinery : Sugar Technology Research Institute, Egypt
- Advanced topics in machine design : Assiut University, Egypt
- Mechanical Behavior of Engineering Materials : Assiut University, Egypt

## SEMINARS AND COURSES

- Attending Materialise MIMICS® innovation course, 2012 : Jawaharlal Nehru University, New Delhi, India
- Attending Training on ARCAM® EBM machine and other 3D printing systems, 2013 : King Saud university, Riyadh, Saudi Arabia
- Ansys Mechanical Workbench training Course, 2013. : Egypt-Japan University of Science and Technology, Alexandria, Egypt.

## SCIENTIFIC AND PROFESSIONAL MEMBERSHIPS

- Member in the Egyptian Syndicate of Engineers.
- Member in the Society for the Advancement of Material and Process Engineering (SAMPE®).
- Engineering Consultations Center, Assiut University, Egypt.

## LANGUAGES

- Arabic (Native Language).
- English (Fluent).
- German (Basics).

## ENGINEERING SOFTWARE SKILLS

- CAD Software : Solidworks, AutoCAD, CATIA v5 and RapidForm
- CAM Software : Mastercam X2, CNC Machining Centers Manual Programming.
- CAE Software : ANSYS Workbench
- BioCAD : Materialise Mimics, 3-Matic and Magics
- Programming : FORTRAN 77
- digital image correlation (DIC) : Vic-2D digital image correlation software

## PROFESSIONAL REFEREES

### Referee (1)

**Prof. Dr. Hassan El-Hofy**

Professor of Production engineering.

Dean of the School of Innovation Design Engineering,  
Egypt-Japan University of Science and Technology (E-JUST),  
New Borg El-Arab City Postal Code 21934, Alexandria, Egypt.

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### Referee (2)

**Prof. Dr. Aboubakr A. M. Nassr**

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Faculty of Engineering,

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### Referee (3)

**Prof. Dr. Aboul-Makarem A.Khalil**

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