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WORK POSITION:

Faculty Member, King Saud University

Associate Professor of Medical Physics and Nanomedicine

Director General, King Abdullah Inst. for Nanotechnology

Department of Physics and Astronomy and King Abdullah Inst. for Nanotechnology
Riyadh, Saudi Arabia

EDUCATION:

Ph.D. in Biomedical Sciences: Medical Physics 2004
Oakland University, Rochester, MI, USA

M.Sc. in Biophysics 1999
The Ohio State University, Columbus, OH, USA

B.Sc. in Physics, *with Honors* 1994
King Saud University, Riyadh, SA

WORK EXPERIENCE

- Teaching Assistant King Saud University, Riyadh, SA 1995-1996
- Graduate Student The Ohio State University, Columbus, OH, USA 1997-1999
- Graduate Student Oakland University, Rochester, MI, USA 2000-2004
- Teaching Assistant Dept. of Physics, Oakland University, MI 2000
- Research Assistant Center for Biomedical Research, Oakland University 2000-2004
- *Visiting Assistant Professor* Yale University, New Haven, CT, USA 2010-2011
- *Visiting Assistant Professor* Yale University, New Haven, CT, USA Summer 2012
- *Visiting Assistant Professor* Institute of Bioengineering and Nanotechnology, Singapore 2014 - 2015

TRAINING:

- MATLAB Tools for Scientists: Introduction to Data Analysis and Visualization
Yale University, New Haven, USA: June 2011.
- Yale Microscopy Workshop: "Super Resolution Imaging"
Yale University, New Haven, USA: June 2011.
- Functional Magnetic Resonance Imaging Visiting Fellowship
The Athinoula A. Martinos Center for Biomedical Imaging, Harvard- MIT Division of Health Sciences and Technology and Mass General Hospital, Charlestown, MA, USA: March 2012.
- Cardiac Magnetic Resonance Imaging Workshop
The Methodist Hospital, Houston, TX, USA: June 2013.
- The Scholarship of Educational Leadership in Higher Education
King Saud University, Riyadh, Saudi Arabia: Feb 2015.
- Computed Tomography Radiation Visiting Fellowship
The Webster Center for Advanced Research and Education in Radiation, Harvard Medical School and Mass General Hospital, Charlestown, MA, USA: June 2015.
- Public-Private Partnership (PPP Implementers)
PPP Experts and Leadership Academy. Human Resource Development Fund, Riyadh, Saudi Arabia: Dec 2015

Database Profiles:

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Google Scholars: <https://scholar.google.com/citations?user=89qOa-oAAAAJ&hl=en>

Scopus Author ID: 9041837400

Thomson Reuters Researcher ID: A-7840-2011

Frontiers and Nature Publishing Group: <http://loop.frontiersin.org/people/266336/overview>

Citations: ~ 1.5k, h-index: 19, i10-index: 29

PUBLICATIONS:

Scientific Papers:

1. Nanocubes of indium oxide induce cytotoxicity and apoptosis through oxidative stress in human lung epithelial cells
M Ahamed, MJ Akhtar, MA Khan, **HA Alhadlaq**, A Aldalbahi
Colloids and Surfaces B: Biointerfaces 2017, 156: 157-164
[Original Article](#)
2. Copper doping enhanced the oxidative stress-mediated cytotoxicity of TiO₂ nanoparticles in A549 cells
J Ahmad, MA Siddiqui, MJ Akhtar, **HA Alhadlaq**, *et al.*
Human & Experimental Toxicology 2017, 0960327117714040
[Original Article](#)
3. Therapeutic targets in the selective killing of cancer cells by nanomaterials
MJ Akhtar, M Ahamed, **HA Alhadlaq**
Clinica Chimica Acta 2017, 469: 53-62
[Review Article](#)
4. Mechanism of ROS scavenging and antioxidant signalling by redox metallic and fullerene nanomaterials: Potential implications in ROS associated degenerative disorders
MJ Akhtar, M Ahamed, **HA Alhadlaq**, Aws Alshamsan
Biochimica et Biophysica Acta 2017, 1861(4) 802–813
[Review Article](#)
5. Nanotoxicity of cobalt induced by oxidant generation and glutathione depletion in MCF-7 cells
MJ Akhtar, M Ahamed, **HA Alhadlaq**, Aws Alshamsan
Toxicology in Vitro 2017, 40: 94–101
[Original Article](#)
6. Cobalt iron oxide nanoparticles induce cytotoxicity and regulate the apoptotic genes through ROS in human liver cells (HepG2)
M Ahamed, MJ Akhtar, Khan MA, **HA Alhadlaq**, Aws Alshamsan
Colloids and Surfaces B: Biointerfaces 2016, 148: 665–673
[Original Article](#)

7. Role of Zn doping in oxidative stress mediated cytotoxicity of TiO₂ nanoparticles in human breast cancer MCF-7 cells
M Ahamed, Khan MA, MJ Akhtar, **HA Alhadlaq**, Aws Alshamsan
Scientific Reports 2016, 6: 30196
[Original Article](#)
8. Copper ferrite nanoparticle-induced cytotoxicity and oxidative stress in human breast cancer MCF-7 cells
M Ahamed, MJ Akhtar, **HA Alhadlaq**, Aws Alshamsan
Colloids and Surfaces B: Biointerfaces 2016, 142: 46–54
[Original Article](#)
9. Differential cytotoxicity of copper ferrite nanoparticles in different human cells
J Ahmad, **HA Alhadlaq**, Aws Alshamsan, et al.
Journal of Applied Toxicology 2016, 36: 1284–1293
[Original Article](#)
10. Zinc ferrite nanoparticle-induced cytotoxicity and oxidative stress in different human cells
HA Alhadlaq, MJ Akhtar, M Ahamed
Cell & Bioscience 2015, 5:1-11
[Original Article](#)
11. Antioxidative and cytoprotective response elicited by molybdenum nanoparticles in human cells
MJ Akhtar, M Ahamed, **HA Alhadlaq**, A Alshamsan, MA Khan, S Alrokayan
Journal of Colloid and Interface Science 2015, 457: 370-377
[Original Article](#)
12. Comparative cytotoxic response of nickel ferrite nanoparticles in human liver HepG2 and breast MFC-7 cancer cells
M Ahamed, MJ Akhtar, **HA Alhadlaq**, MA Khan, S Alrokayan
Chemosphere 2015, 135: 278-288
[Original Article](#)
13. Aluminum doping tunes band gap energy level as well as oxidative stress-mediated cytotoxicity of ZnO nanoparticles in MCF-7 cells
MJ Akhtar, **HA Alhadlaq**, A Alshamsan, MA Khan, M Ahamed
Scientific Reports 2015, 5: 13876
[Original Article](#)

- 14. Glutathione replenishing potential of CeO₂ nanoparticles in human breast and fibrosarcoma cells**
MJ Akhtar, M Ahamed, **HA Alhadlaq**, MA Khan, S Alrokayan
Journal of Colloid and Interface Science 2015, 453: 21-27
[Original Article](#)
- 15. Assessment of the lung toxicity of copper oxide nanoparticles: current status**
M Ahamed, MJ Akhtar, **HA Alhadlaq**, S Alrokayan
Nanomedicine 2015, 10: 2365-2377
[Special Report](#)
- 16. Selective cancer-killing ability of metal-based nanoparticles: implications for cancer therapy**
M Ahamed, MJ Akhtar, **HA Alhadlaq**, S Alrokayan
Archives of Toxicology 2015, 10: 1-13
[Review Article](#)
- 17. Comparative cytotoxicity of dolomite nanoparticles in human larynx HEp2 and liver HepG2 cells**
M Ahamed, **HA Alhadlaq**, Javed Ahmad, MA Siddiqui, ST Khan, J Musarrat, A Al-Khedhairi
Journal of Applied Toxicology 2015, 35: 640-650
[Original Article](#)
- 18. Cytotoxic response of platinum-coated gold nanorods in human breast cancer cells at very low exposure levels**
M Ahamed, MJ Akhtar, MA Khan, **HA Alhadlaq**, S Alrokayan
Environmental Toxicology 2015, DOI: 10.1002/tox.22140
[Original Article](#)
- 19. Concentration-dependent induction of reactive oxygen species, cell cycle arrest and apoptosis in human liver cells after nickel nanoparticles exposure**
J Ahmad, **HA Alhadlaq**, MA Siddiqui, Q Saquib, A Al-Khedhairi, J Musarrat, M Ahamed
Environmental Toxicology 2015, 30: 137-148
[Original Article](#)
- 20. Molybdenum nanoparticles-induced cytotoxicity, oxidative stress, G2/M arrest, and DNA damage in mouse skin fibroblast cells (L929)**

MA Siddiqui, Q Saquib, M Ahamed, NN Farshori, J Ahmad, R Wahab, ST Khan, **HA Alhadlaq**, J Musarrat, A Al-Khedhairi, AB Pant
Colloids and Surfaces B: Biointerfaces 2015, 125: 73-81
[Original Article](#)

21. [Targeted anticancer therapy: Overexpressed receptors and nanotechnology](#)
MJ Akhtar, M Ahamed, **HA Alhadlaq**, SA Alrokayan, S Kumar
Clinica Chimica Acta 2014, 436: 78-92
[Review Article](#)

22. [Synthesis, Characterization, and Antimicrobial Activity of Copper Oxide Nanoparticles](#)
M Ahamed, **HA Alhadlaq**, MA Khan, P Karuppiah, NA Al-Dhabi
Journal of Nanomaterials 2014, 2014: 7
[Original Article](#)

23. [Nickel nanoparticle-induced dose-dependent cyto-genotoxicity in human breast carcinoma MCF-7 cells](#)
M Ahamed, **HA Alhadlaq**
Onco Targets and Therapy 2014 (7): 269
[Original Article](#)

24. [Comparative effectiveness of NiCl₂, Ni- and NiO-NPs in controlling oral bacterial growth and biofilm formation on oral surfaces](#)
Khan S., Ahamed M., **Alhadlaq HA**, Musarrat J., Al-Khedhairi A.
Archives of Oral Biology 2013, 58 (12): 1804-1811
[Original Article](#)

25. [Dose-dependent genotoxicity of copper oxide nanoparticles stimulated by reactive oxygen species in human lung epithelial cells](#)
Akhtar M, Kumar S, **Alhadlaq HA**, Alrokayan S, Abu-Salah K, Ahamed M
Toxicology and Industrial Health 2013, Online 0748233713511512, in print: 2016, 32 (5), 809-821
[Original Article](#)

26. [Nickel oxide nanoparticles exert cytotoxicity via oxidative stress and induce apoptotic response in human liver cells \(HepG2\)](#)
Ahamed M., Ali D., **Alhadlaq HA**, Akhtar M.
Chemosphere 2013, 93(10):2514-22
[Original Article](#)

27. Multifunctional gadofulleride nanoprobe for magnetic resonance imaging/fluorescent dual modality molecular imaging and free radical scavenging
Zheng J, Zhen M, Ge J., Liu Q, Jiang F, Shu C, **Alhadlaq HA**, Wang C
Carbon 2013, 65:175-180
[Original Article](#)
28. Copper Oxide Nanoparticles Induced Mitochondria Mediated Apoptosis in Human Hepatocarcinoma Cells
Siddiqui M, **Alhadlaq HA**, Ahmad J, Al-Khedhairi A, Musarrat J, Ahamed M
PloS One 2013, 8: e69534
[Original Article](#)
29. Iron Oxide Nanoparticle-Induced Oxidative Stress And Genotoxicity In Human Skin Epithelial And Lung Epithelial Cell Lines
M Ahamed, **HA Alhadlaq**, J Alam, MA Khan, D Ali, S Alarafi
Current Pharmaceutical Design 2013, 19: 6681-6690
[Original Article](#)
30. Induction of oxidative stress, DNA damage, and apoptosis in a malignant human skin melanoma cell line after exposure to zinc oxide nanoparticles
Alarifi S, Ali D, Alkahtani S, Verma A, Ahamed M, Ahamed M, **Alhadlaq HA**
International Journal of Nanomedicine 2013, 8: 983
[Original Article](#)
31. Selective killing of cancer cells by iron oxide nanoparticles mediated through reactive oxygen species via p53 pathway
Ahamed M., **Alhadlaq HA**, Khan M., Akhtar M.
Journal of Nanoparticle Research 2012, 15: 1-11
[Original Article](#)
32. Multifunctional imaging probe based on gadofulleride nanoplatform
Zheng Jun-peng, Liu Qiao-ling , Zhen Ming-ming , Jiang Feng , Shu Chun-ying , Jin Chan, Yang Yongji , **Alhadlaq HA**, Wang Chun-ru
Nanoscale 2012, 4: 3669-3672
[Communication Article](#)
33. Genotoxic potential of copper oxide nanoparticles in human lung epithelial cells
Ahamed M., Siddiqui M., Akhtar M., Ahmad I., Pant A., **Alhadlaq HA**
Biochem and Biophys Research Communications 2010, 396(2): 578-583
[Original Article](#)

- 34.** Elucidation of the effects of a high fat diet on trace elements in rabbit tissues using atomic absorption spectroscopy.
Abdelhalim M.A, **Alhadlaq HA**, Moussa S.A.
Lipids in Health and Disease 2010, 9 (1): 2
[Original Article](#)
- 35.** Microorganisms Inactivation by Microwaves Irradiation in Riyadh Sewage Treatment Water Plant.
Almajhdi F., Albrithen H., **Alhadlaq HA**, Farrag M., Abdel-Megeed A.
World Applied Sciences Journal 2009, 6 (5): 600-607
[Original Article](#)
- 36.** Evaluation of Electrical Conductivity of Hemoglobin and Oxidative Stress in High Fat Diet Rabbits.
Moussa S.A., Abdelhalim M.A., **Alhadlaq HA**
Journal of Applied Sciences 2009, 9 (11): 2185-2189
[Original Article](#)
- 37.** Measuring students' beliefs about Physics in Saudi Arabia
Alhadlaq HA, F Alshaya, S Alabdulkareem, KK Perkins, WK Adams, CE Wieman
Physics Education Research Conference Proceedings 2009, 1179: 665-673
[Original Article](#)
- 38.** Molecular and Morphological Adaptations in Compressed Articular Cartilage by Polarized Light Microscopy and Fourier-Transform Infrared Imaging
Y. Xia, **Alhadlaq HA**, N. Ramakrishnan , A. Bidthanapally, F. Badar.
Journal of Structural Biology 2008, 164:76–84
[Original Article](#)
- 39.** Effects of Cholesterol Feeding Periods on Blood Hematology and Biochemistry of Rabbits
Abdelhalim M.A., **Alhadlaq HA**
International Journal of Biological Chemistry 2008, 164:76–84
[Original Article](#)
- 40.** Morphological Changes in Articular Cartilage due to Static Compression: A Polarized Light Microscopy Study
Alhadlaq HA, Xia Y, Hansen F, Les C, Lust G.
Connective Tissue Research 2007, 48 (2): 76-84
[Original Article](#)

41. Modifications of orientational dependence of μ MRI T_2 anisotropy in compressed articular cartilage
Alhadlaq HA, Xia Y.
Journal of Magnetic Resonance Imaging 2005, 22(5):665-673
Original Article
42. The structural adaptations in compressed articular cartilage by microscopic MRI (μ MRI) T_2 anisotropy.
Alhadlaq H. A., Xia Y.
Osteoarthritis Cartilage 2004;12(11):887-894
43. Detecting structural changes in early experimental osteoarthritis of tibial cartilage by microscopic magnetic resonance imaging and polarized light microscopy
Alhadlaq H. A., Xia Y, Moody JB, Matyas JR.
Ann Rheum Dis 2004;63(6):709-17.
44. Imaging the physical and morphological properties of a multi-zone young articular cartilage at microscopic resolution
Xia Y, Moody JB, **Alhadlaq H**, Hu J.
J Magn Reson Imaging 2003;17(3):365-74.
45. Oriental dependence of T_2 relaxation in articular cartilage: A microscopic MRI (μ MRI) study
Xia Y, Moody JB, **Alhadlaq H**.
Magn Reson Med 2002;48(3):460-9.
46. Characteristics of topographical heterogeneity of articular cartilage over the joint surface of a humeral head.
Xia Y, Moody JB, **Alhadlaq H**, Burton-Wurster N, Lust G.
Osteoarthritis Cartilage 2002;10(5):370-80.

Abstracts and Conference Presentations:

1. **Alhadlaq H.A.**, Ahamed M., and Javed MA.
Selective killing of human liver cancer cells by zinc oxide nanoparticles. The 14th NanoSpain Conference. 2017; San Sebastian, Spain.
2. Ahamed M. and **Alhadlaq H.A.**

Selective killing of human liver cancer cells by zinc oxide nanoparticles. 3rd Nano Today conference. 2013; Biopolis, Singapore.

3. **Alhadlaq H.A.** and Ahamed M.
Anticancer Activity of Engineered Nanomaterials. Imagine Nano 2013 conference. 2013; Bilbao, Spain.
4. Ahamed M., **Alhadlaq H.A.**, Khan M.
Selective killing of cancer cells by iron oxide nanoparticles mediated through reactive oxygen species. Nanoscience and Nanotechnology International Conference. 2013; Porto, Portugal.
5. **Alhadlaq H. A.**
Quantitative measurements of imaging parameters of joint soft tissues at high resolution. In: Proceedings of the 2nd World Congress on Biotechnology. 2011; Philadelphia, PA, USA.
6. **Alhadlaq H. A.**, Coman D., Hyder F.
Increased redundancy for thulium-based biosensing agents by ¹³C NMR. In: Proceedings of the 39th annual meeting of ISOTT. 2011; Washington, DC, USA.
7. Coman D., **Alhadlaq H. A.**, Hyder F.
Molecular imaging with MRS at the speed of MRI. In: Proceedings of the 39th annual meeting of ISOTT. 2011; Washington, DC, USA.
8. Hyder F. , Coman D., **Alhadlaq H. A.**
Molecular Imaging with MRS: overview. In: Symposium and Training XIX: CEST and Spectroscopy for Cancer and Other High-Impact Diseases. 2011; Dallas, TX, USA.
9. **Alhadlaq H. A.**, Perkins K.K., Adams W.K., Al-Dossary O.M.
Perceptions and Beliefs of Undergraduate Physics Majors Toward Physics in Saudi Arabia. In: Proceedings of the 2011 AAPT Summer Meeting. 2011; Omaha, NE, USA.
10. **Alhadlaq H. A.**, Xia Y, Moody JB, Matyas J.
Changes in Superficial zone detected by micro-MRI and PLM in early experimental Osteoarthritis of canine tibial cartilage. In: Transactions of the 49th Annual Meeting, Orthopedic Research Society, 2003; New Orleans, LA, USA.
11. Moody JB, Xia Y, **Alhadlaq H.** Burton-Wurster N, Lust G.

Changes in T₂ relaxation anisotropy of ovine articular cartilage after enzymatic depletion of proteoglycan. In: Transactions of the 49th Annual Meeting, Orthopedic Research Society, 2003; New Orleans, LA, USA.

12. Xia Y, **Alhadlaq H. A.**

Early Detection of Osteoarthritis in Cartilage by μ MRI and PLM. Presented at the 7th International Conference on Magnetic Resonance Microscopy, 2003; Snowbird, UT, USA.

13. **Alhadlaq H. A.**, Xia Y.

Sensitivity of T₂ relaxation anisotropy towards ultrastructural modifications in compressed cartilage: a microscopic MRI study. In: Transactions of the 50th Annual Meeting, Orthopedic Research Society, 2004; San Francisco, CA, USA.

14. Xia Y, **Alhadlaq H. A.**

Response of collagen fibrils to compression in individual histological zones in articular cartilage. In: Transactions of the 50th Annual Meeting, Orthopedic Research Society, 2004; San Francisco, CA, USA.

15. **Alhadlaq H. A.**, Xia Y.

Changes in regional T₂ relaxation in compressed cartilage: A microscopic MRI study. Fall Meeting of the Ohio Section of the APS, 2004; Rochester, MI, USA.

16. NiloufarFozouni, **Alhadlaq H. A.**, IlcoAksovski, Xia Y.

Morphological modifications in compressed articular cartilage: a polarized light microscopy. Fall Meeting of the Ohio Section of the APS, 2004; Rochester, MI, USA.

17. Xia Y., **Alhadlaq H.A.**

Orientalional Dependence of Compressed Cartilage by μ MRI T₂ Anisotropy. In: Proceedings of the 13th Annual Meeting, the International Society for Magnetic Resonance in Medicine, 2005; Miami Beach, FL, USA.

18. **Alhadlaq H.A.**, Xia Y, Fozouni N, Aksovski I.

Articular Cartilage Under Static Load: A Quantitative Polarized Light Microscopic Imaging Study Correlated with Micro-MRI (μ MRI) Findings. In: Proceedings of the 14th Annual Meeting, the International Society for Magnetic Resonance in Medicine, 2006; Seattle, WA, USA.

Teaching Physics at the Undergrad Level:

1. Making On-Line Science Course Materials Easily Translatable and Accessible Worldwide: Challenges and Solutions.
Wendy Adams, **HishamAlhadlaq**, et al.
“NuovoCimento C” (associated Journal to European Physical Journal) Vol. 33 • N. 3 pp 113-119
2. New Developments in the PhET Interactive Simulations Project.
Katherine Perkins, Wendy Adams, **HishamAlhadlaq**, et al.
American Association of Physics Teachers (AAPT) 2010 Summer Meeting, Portland, OR, USA
3. A CLASS Study of Student Perceptions of Physics in Saudi Arabia and the U.S.
Katherine Perkins, **HishamAlhadlaq**, et al
American Association of Physics Teachers (AAPT) 2010 Summer Meeting, Portland, OR, USA
4. Beliefs about Physics in Saudi Arabia Before and After Instruction.
HishamAlhadlaq, et al
2010 APS/AAPT Joint Winter Meeting, Washington D.C., USA
5. Making On-line Science Course Materials Easily Translatable and Accessible Worldwide: Challenges and Solutions.
Wendy Adams, **HishamAlhadlaq**, et al.
Journal of Science and Education Technology, ISI-indexed
6. Perceptions and Beliefs of Undergraduate Physics Majors toward Physics in Saudi Arabia.
HishamAlhadlaq, et al.
American Association of Physics Teachers (AAPT) 2011 Summer Meeting, Omaha, NE, USA

Invited Talks and Workshops:

- Saudi FDA First Workshop. Session Chairman. Oct 19, 2017. Saudi FDA, Riyadh, Saudi Arabia.
- “Imaging and Spectroscopy of Biomaterials & Properties of Metal Nanoparticles”. Dec 06, 2016. Dept. of Physics, Imam University, Riyadh, Saudi Arabia.
- “Nanoscience and Nanotechnology: Applications and the Future. Education Conference “Partners in Excellence”. May 2-3, 2015. Doha, Qatar.

- KSU- British Council Jointed Research Workshop. “Nanotechnology and its Applications”. April 16, 2015. King Saud University, Riyadh, Saudi Arabia.
- KACST-Nature Publishing Group Workshop. “Future Steps in KSA Science Publishing”. April 7, 2015. King Abdulaziz City for Science and Technology, Riyadh, Saudi Arabia.
- The 3rd Saudi International Nanotechnology Conference (3SINC), Dec 1-2, 2014. King Abdulaziz City for Science and Technology, Riyadh, Saudi Arabia.
- Workshop on “Medical Diagnosis Using Ultrafast Lasers” Sept 18th, 2014. Leopold-Franzens Universitat Innsbruck, Innsbruck, Austria.
- “Metal nanoparticles and shift agents: implications for cancer therapy and diagnosis” Mar 6, 2013. Workshop on Early Cancer Diagnosis with Laser Light. Max Planck Institute of Quantum Optics, Garching, Germany.
- “Diagnostic Imaging: from Light to Confocal”: Nov 20, 2013. Laser and Cosmetic Surgery 2013: Riyadh, Saudi Arabia.
- “The Physics of Light”: 2010. Laser International Conference 2010: Riyadh, Saudi Arabia.
- “New MRI Frontiers: from Research to Potential Medical Applications”: April 15, 2007. King Abdulaziz Medical City: Riyadh, Saudi Arabia.