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## CURRICULUM VITAE

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### Hanna Moussa, PhD

Citizenship: United States of America  
Gender: Male  
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TTU employment: 12/01/2012



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### EDUCATION

2000 Ph.D. Nuclear Engineering, University of Tennessee, Knoxville, TN  
*"Estimation of Absorbed Fraction to the Anterior Nose".*  
1991 M.S. Physics, Radiological Sciences, University of Mass at Lowell  
*"Analysis in support of a design for low Energy source of Compton Scattered Photons".*  
1990 B.S. Physics, Health Physics, University of Massachusetts at Lowell.

### PROFESSIONAL EXPERIENCE

09/2013- Assistant Professor - Senior Health & Medical Physicist  
Mechanical Engineering Department, Texas Tech University (TTU),  
Lubbock. TX.  
12/2012-08/2013 Assistant Professor - Senior Health & Medical Physicist  
College of Human Sciences, TTU, Lubbock, TX.  
2004- Present Research Assistant Professor, Nuclear Engineering Department, the  
University of Tennessee (UT), Knoxville, TN.  
2008-2010 Senior Health Physicist, Battelle Memorial Institute  
Walter Reed Army Medical Center Washington, D.C.  
2002-2004 Director of UT Radiation Safety Dept., and Radiation Safety Officer  
University of Tennessee, Knoxville, TN.  
2001-2002 Interim Radiation Safety Officer.  
University of Tennessee, Knoxville, TN  
1997-2001 Assistant Radiation Safety Officer.  
University of Tennessee, Knoxville, TN.

### HONORS AND AWARDS

2010 Battelle Travel Fund, Albuquerque, NM.  
2003 University of Tennessee, Travel Award, Brisbane, Australia.  
2001 Radiation Research Society Award, San Juan, Puerto Rico.  
2000 Health Physics Society Travel Grants, Denver, CO.

## FUNDING AND GRANTS AWARDED

### Completed:

- 2013-2016 Startup funds (PI: Hanna Moussa; TTU; \$100,000)  
Health and Medical Physics, Dose estimation, cancer risk, and space radiation.
- 2016-2017 ORC Pilot and Feasibility Grant. (TTU; \$8000). Role: PI. Modeling of Mammography Radiation Exposure on Human Adipose Breast Tissue.
- 2015-2016 ORC Pilot and Feasibility Grants. (TTU; \$7,000). Role: Co-PI (PI: Dr. Nouredine Abidi). Developing Fourier Transform Infrared Imaging (FTIR) for Nutrition and Obesity Research.
- 2013-2014: Wyle Laboratories (NASA) (Total award \$162,214; TTU subcontract: \$60,000). Development Lookup Tables or parameterizations (curve fits) of Particle Fluences Using FLUKA Monte Carlo Transport Code.
- 2012-2013: Wyle Laboratories (NASA). (TTU subcontract: \$50,889). Development Lookup Tables or parameterizations (curve fits) of Particle Fluences Using FLUKA Monte Carlo Transport Code.

### PROFESSIONAL SOCIETIES

- 1992- Health Physics Society, Plenary member.  
2000- Radiation Research Society, Member.

### PROFESSIONAL SERVICES

- 2012-2015 Health Physics Society, serving on membership committee.  
2008- Reviewer, Health Physics Journal.  
2008-2015 Reviewer, Particle Physics Insights.  
2008-2015 Editor in chief, Particle Physics Insights, Online Journal.

### GRANT REVIEW COMMITTEES

- 2015- NASA EPSCoR review panel (The Experimental Program to Simulate Competitive Research).  
2015- Reviewer for NASA post-Doctoral program through Oak Ridge Associated Universities (ORAU).

### INSTITUTIONAL COMMITTEES

- 2015- 2016 Member of Safety Committee,  
TTU, Mechanical Engineering Department.  
2000-2004 Member, Radiation Safety Committee, UT.  
2002-2004 Member, Institutional Review Board (IRB), UT.

### TEACHING (EXCLUDING THESIS AND DISSERTATIONS):

**Graduate Level (F = fall; S = spring; Su = summer; De = distance education)**

Texas Tech University: Mechanical Engineering Department

ME 6330 – Introduction to Radiation and Simulation, (3 credits) Fall, 2015-Fall 2018.

University of Tennessee: Nuclear Engineering Department

NE 551 - Radiation Protection (3 credits) (DE-Fall 2006).

Georgia Institute of Technology:

HP 6750 - Radiation Detection and lab (GTA), (4 credits) Fall-1993.

**Undergraduate Level (F = fall; S = spring; Su = summer; De = distance education)**

Texas Tech University:

ME 4390- Fundamentals of Nuclear Science, Spring 2017

ME 4390- Fundamentals of Nuclear Science, Spring 2016

ME 2301-Statics, fall (2013, 2014, 2016), spring (2014, 2015, 2017, 2019)

The University of Tennessee:

NE 433 – Radioassay and Dosimetry Laboratory (3 credits). Designed and taught the laboratory (Fall 1994, 1995 and Spring 1995).

NE 301 - Fundamentals of Nuclear & Radiological engineering (3 credits), fall 2005

NE 431 - Radiation Protection (3 credits) spring 2006

**THESIS AND DISSERTATION COMMITTEES**

○ Committee chair (mentor/advisor)

Fall 2018 – Present	Ph.D. Mechanical Engineering, Texas Tech: Mohammad Yosofvand
Fall 2014 – Fall 2018	Ph.D. Mechanical Engineering, Texas Tech: Al Maqsudur,Rashid.
Fall 2014 - Fall 2017	MS. Mechanical Engineering, Texas Tech: Chowdhury, Kafil.
Fall 2016 – Spring 2018	MS. Mechanical Engineering, Texas Tech: Lovelace Mitch
Fall 2015- Spring 2015	Ph.D. Mechanical Engineering, Texas Tech: Rahman, Minhaz.
Summer 2016- Fall 2016	ME Undergraduate student, Texas Tech: Curtis Hallman.

○ Committee member:

Fall 2014 –	TTU: Ph.D. Mechanical engineering department, Chandrasekhar Meduri
2016 - 2017	TTU: Ph.D. Mechanical engineering department, Niloofar Fathollahi.
2014 - 2017	TTU: Ph.D. Department of Plant & Soil Sciences, Sumedha Liyanage, Fiber and Biopolymer Research Institute.
2014 – 2017	TTU: Ph.D. Department of Plant & Soil Sciences, Poorna Tharaka Wansapura, Fiber and Biopolymer Research Institute.
2015 – 2017	TTU: MS. Department of Plant & Soil Sciences, Prakash Parajuli, Fiber and Biopolymer Research Institute.
2005 – 2006	UT: M.S. Nuclear Engineering; Amy Street (Medical Physicist).

2005 – 2006      McComas Enterprises, Richmond, VA).  
UT: M.S. Nuclear Engineering; Youssef Charara (Ph.D. Student, UT).

○ Student graduated:

Al Maqsdur Rashid    Ph.D.    December 2018  
Chowdhury, Kafil    MS.    December 2017.  
Lovelace, Mitch    MS.    Spring 2018.

○ Dean Representative:

Elham Davoodi      30, 2017  
Shashwati U. Atwe    May, 2017

## CURRENT RESEARCH INTERESTS

1. Medical Physics

Focus on MCNP6 to estimate dose to the breast as a result of exposure to machines producing ionization radiation-mammogram (*publication in preparation*). Using MCNPX and MCNP6, I simulate the energy deposited from proton and heavy ions beams to estimate the energy lost outside the region of interest; in addition, I experimentally investigating the effect of such beams on the normal tissue and cells adjacent to the cancer region during the cancer therapy in collaboration with biology and nutrition scientists at Texas Tech and other Universities. Comparing the dose from MCNPX and the effects (obtained experimentally) we will be able to find the relationship between the dose and the damage/effect beyond the assumed tumor region (SOBP) with various medically significant parameters (tumor depth and location in the human body).

2. Prediction of Solar Particle Event Dose

Determine means to predict the dose to astronauts and the space station crew from future solar particle events, given the knowledge of the previous dose spectra of 133 solar events. This will help determine if and when to cancel a space trip and/or ask the crew in the space station to stay inside the shielded room during the event time. (*Funded by NASA*; Manuscript published in *Space Weather Journal*. Impact factor 2.2. July 24, 2018.

3. High Energy Charged-Particle Transport

I have been working with MCNPX, and MCNP6 Code to estimate the dose to a various material from a high energy proton and electron space spectrum.

4. FTIR Imaging

Exploring uses of the Fourier Transform Infrared Spectroscopy (FTIR) to investigate the changes in material structure (organic and non-organic materials i.e., polymer gel (MAGIC- f), protein, fat tissue, and cancer cells) as a result of its exposure to radiation

and/or other toxic agents by applying mathematical modeling, statistical analysis, and other available computational modeling (Published in *Journal of Applied Polymer Science*. Impact factor 1.77. February 2017).

5. Heavy Ion beam and cancer treatment

Study the effect of heavy ions beam (High LET) on human tissue (cancer and normal tissue) and the range of the fragments beyond the cancer region (beyond the Bragg Peak).

6. Medical Imaging

A new research area I have initiated at Texas Tech University is to develop an effective tool to extract and quantify data from microscopic images to be applied in biology, nutrition and other scientific fields using Java, MATLAB medical imaging toolbox and C++ programming. The idea is to use available technology to obtain additional physical information (e.g., change in concentration of media, change in gross rate, how fast cancer cell grow, etc.) from microfilm or images. Manuscript published in *The Journal of Nutrition Biochemistry*. Impact factor 4.52. January 2017.

OTHER RESEARCH INTERESTS AND PREVIOUS EXPERIENCE:

1. Radiological Engineering/Health Physics

Investigated modifications to the ICRP respiratory tract model. Our research focused on calculating dose deposition in the tissues of the ET1 (extra-thoracic) region (nose) resulting from beta decays by airborne sources. The work uses the MCNP4B computer code to estimate the doses. New models of the ET1 region geometry were developed. [Collaborators: K.F. Eckerman (ORNL) and L.W. Townsend (UT)] (*Published in Health physics and Radiation Dosimetry Journals*).

2. Exposure to human from infinite surface source

Using MCNPX We would like to know the exposure vs. height to human from infinite surface source on the ground due to the deposition of radioactive materials as a result of accidental release (from nuclear power plant or other accident) (publication in preparation).

3. Cancer and low energy radiation

The effect of low energy radiation (photon, electron, proton) beam on cancer and normal tissue in the human being (Manuscript published in *International Journal of Radiation Biology*. Impact factor 1.992, Epub July 2, 2018).

## **INVITED PRESENTATIONS**

1. **Moussa, H. M:** Dust Particle Size Effect on Absorbed Fractions Value of ICRP Nose Model. Idaho State University, Physics Department, May 9, 2006.
2. **Moussa, H. M:** Application of MCNPX Approaches to Space Radiation. National Institute of Standards & Technology (NIST), Gaithersburg, MD, October 27, 2006.
3. **Moussa, H.M:** Dust Particle Size Effects on Absorbed Fraction Values in the Anterior Nose. Nuclear and Radiological Engineering department, Georgia Institute of Technology, Atlanta Georgia, April 16, 2007.
4. **Moussa, H. M:** Dust Particle Size Effect on Absorbed Fractions Value in the Anterior Nose. University of Ontario Institute of Technology, Nuclear engineering department, May 1, 2008.
5. **Moussa, H. M:** Solar Particle Event (SPE) Forecasting Using Regression Techniques. 44<sup>th</sup> International Conference in Environmental System (ICES), July 13-17, 2014, Tucson, Arizona.
6. **Moussa, H. M:** Dose to water from Proton Solar particle Event (SPE). Mechanical Engineering Department, University of Peradeniya - Sri Lanka, August 13, 2015.
7. **Moussa, H. M:** Solar Particle Event (SPE) Forecasting Using Kernel Regression Technique. International Congress of Mechanical Engineering. Centro Universitario Dinamica des Cataratas (UPC), Foz do Lguacu, Parana-Brazil, March15-17, 2017
8. **Moussa, H. M:** Application of Monte Carlo (MCNP) in Dosimetry and Space Radiation. Zhejiang Chinese Medical University. September 2018.

## **PEER REVIEWED PUBLICATIONS**

### **University of Tennessee-Knoxville**

1. **Moussa, H. M.;** Eckerman K. F.; Townsend, L. W.; and Pevey, R.E: Estimation of Electron Absorbed Fraction in the Extrathoracic Airways. Health Physics, Vol. 80, No 1, January 2001, pp. 12-15. [Impact Factor: 1.271](#).
2. Townsend, L., Stephens, D., Hoff, J., Braley, G. et al., and **Moussa H. M.** "Worst Case Solar Energetic Particle Events for Deep Space Missions," SAE Paper N. 01ICES-292.012001-01-2330, 2001, doi: 10.4271/2001-01-2330. [Impact factor 0.338](#).
3. **Moussa, H. M.;** Eckerman K. F.; and Townsend, L. W.: Absorbed Fraction Sensitivity to Changes in Size of the ICRP Nose Model. Health Physics, Vol. 82, No. 3, March 2002, pp. 392-394. [Impact Factor: 1.271](#).
4. **Moussa, H. M.;** Eckerman K. F.; and Townsend, L. W.: Self-Absorbed Effect on Electron Absorbed Fraction in the Anterior Nose. Radiation Protection Dosimetry, Vol. 99, Nov. 1-4, 2002, pp. 473-474. [Impact Factor: 0.917](#).
5. **Moussa, H. M.;** Eckerman K. F.; and Townsend, L. W.: Electron Absorbed Fractions Based on a New Model of the Anterior Nasal Passage. Health Physics, Vol. 86, No. 1, January 2004, pp. 19-24. [Impact Factor: 1.271](#).
6. Townsend, L.W.; **Moussa, H.M.;** Charara, Y., "Characterization of the lunar radiation environment using the CRaTER detector," *2006 IEEE xplore*, pp.10 pp. doi: 10.1109/AERO.2006.1655759. [Impact factor 9.237](#).
7. Townsend, L.W.; Stephens Jr. D.L.; Hoff. J.L.; Zapp, E.N.; **Moussa, H.M.;** Miller, T.M.; and Campbell, C.E.: The Carrington event: Possible doses to crews in space from a

comparable event. Advances in Space Research, VOL. 38, issue 2, 2006, pp. 226 – 231. [Impact Factor: 1.401](#).

8. **Moussa, H. M.**; Eckerman K.F.; and Townsend L.W.: Charged Particle Equilibrium Effects on The Electron Absorbed Fraction in The Extrathoracic Airways. Radiation Protection Dosimetry, Vol. 121, No. 3, December 2006, pp. 252 - 256. [Impact Factor: 0.917](#).
9. Charara, Y.; Townsend, L.; **Moussa, H.M.**; Hatcher, R.; Dudney, C.; McKee, S.; McKinnis, P.; Ottinger, K. Calculated Energy Loss Spectra in the CRaTER Detector for Selected Cosmic Ray Ions, Aerospace Conference, 2007 IEEE Xplore , pp.1-12, 3-10 March 2007. 10.1109/AERO.2007.352780. [Impact factor 9.237](#).
10. **Moussa, H. M.**: Dust Particle Size Effects on Absorbed Fraction Values in the Anterior Nose. Health Physics, Vol. 93, No. 4, October 2007, pp. 307-311. doi: 10.1097/01.HP.0000268728.63088.0c. [Impact Factor: 1.271](#).
11. Townsend, L.W.; **Moussa, H.M.**; and Charara, Y.M.: Monte Carlo Simulations of Energy Losses by Space Protons in the CRaTER Detector. Acta Astronautica, doi:10.1016/j.actaastro.2009.08.007. [Impact Factor: 1.536](#).

### **Texas Tech University:**

#### **In 2013:**

1. **Hanna M. Moussa**; Mark A. Melanson (U.S. Army Public Health Command, Aberdeen Proving Ground, MD): Translation of Dose Coefficients from ICRP 53 to ICRP 80. Health Physics, Vol. 104, No. 2, February 2013, pp. 224-226. doi: 10.1097/HP.0b013e3182758035. [Impact Factor: 1.271](#).

#### **In 2014:**

2. **H. Moussa**, Lawrence W. Townsend: Solar Particle Event Dose Forecasting Using Regression Techniques. 44th International Conference on Environmental Systems. <http://hdl.handle.net/2346/59720>. July 13, 2014.
3. Lawrence W. Townsend, Anne M. Adamczyk, Charles M. Werneth, **Hanna M. Moussa** and Jeremy P. Townsend: Estimates of extreme solar particle event radiation exposures on Mars. Progress in Nuclear Science and Technology. Volume 4 (2014) pp. 793-797. 2014. doi: 10.15669/pnst.4.793. [Impact factor 0.72](#).

#### **In 2015:**

4. Sumedha Liyanage, Noureddine Abidi, Dick Auld, **Hanna Moussa**: Chemical and physical characterization of galactomannan extracted from guar cultivars (*Cyamopsis tetragonolobus* L.). Industrial Crops and Products, Volume 74, (2015), Pages 388–396. doi: 10.1016/j.indcrop.2015.05.013. [Impact factor 3.181](#).

#### **In 2016:**

5. L.W. Townsend; J.A. Porter; W.C. deWet; W.J. Smith; L.H. Heilbronn; **H. M. Moussa**: Exterme Solar Event of AD775: Potential Radiation Exposure to Crews in Deep Space. *Acta Astronautica*, Volume 123, June–July 2016, Pages 116–120 doi: 10.1016/j.actaastro.2016.03.002. [Impact factor 1.536](#).
6. Rohan S Dassanayake; Erandathi Rajakaruna; **Hanna Moussa**; and Nouredine Abidi. One-pot synthesis of MnO<sub>2</sub>-chitin hybrids for effective removal of methylene blue. *International Journal of Biological Macromolecules*. Volume 93, August 2016, pages 350-358. [Htt://dx.doi.org/10.1016/j.ijbiomac.2016.08.081](http://dx.doi.org/10.1016/j.ijbiomac.2016.08.081). [Impact factor 3.671](#).
7. Yang Hu; Shanshan Li; Tanya Jackson; **Hanna Moussa**; Nouredine Abidi. Preparation, characterization, and cationic functionalization of cellulose-based aerogels for wastewater clarification. *Journal of Materials*. Volume 2016, Article ID 3186589, 10 pages. November 16, 2016. <http://dx.doi.org/10.1155/2016/3186589>. [Impact factor 1.77](#).

### **In 2017**

8. Mandana Pahlavani; Fitia Razafimanjato; Latha Ramalingam; Nishan S Kalupahana; **Hanna Moussa**; Shane Scoggin; Naima Moustaid-Moussa. Eicosapentaenoic Acid Regulates Brown Adipose Tissue Metabolism in High Fat Fed Mice and in Clonal Brown Adipocytes. *The Journal of Nutritional Biochemistry*. Volume 39, January 2017, Pages 101-109. <http://dx.doi.org/10.1016/j.jnutbio.2016.08.012>. [Impact factor 4.518](#).
9. Sanjit Acharya; Yang Hu; **Hanna Moussa**; Nouredine Abidi. Preparation and characterization of transparent cellulose films using an improved cellulose dissolution process. *Journal of Applied Polymer Science*. February 7, 2017. doi: 10.1002/app.44871. [Impact factor 1.77](#).
10. Poorna Tharaka Wansapura; Rohan Suranga Dassanayake; Abdul N. Hamood; Phat Tran; **Hanna Moussa**; Nouredine Abidi. Preparation of Chitin-CdTe Quantum Dots Films and Antibacterial Effect on *Staphylococcus aureus* and *Pseudomonas aeruginosa*. *Journal of Applied Polymer Science*. February 7, 2017. doi:10.1002/app.44904. [Impact factor 1.77](#).
11. Lawrence W. Townsend; Wouter C. DeWet; Fahad Zaman; Natalie A. McGirl; Lawrence H. Heilbronn; **Hanna Moussa**. Radiation Exposure Estimates for Deep Space Missions Revisited. 47th International Conference on Environmental Systems. July 20, 2017. Charleston, South Carolina, USA, 2017.



## **In 2018**

12. Al-Jawadi A; **Moussa H**; Ramalingam L; Dharamawardhane S; Gollahon L; Gunaratne P; Layeequr Rahman R; Moustaid-Moussa N. Protective properties of n-3 fatty acids and implications in obesity-associated breast cancer. *Journal of Nutrition Biochemistry*. March 2018, 53:1-8. doi: 10.1016/j.jnutbio.2017.09.018. Epub 2017 Oct 4. Impact factor 4.518.
13. Al Maqsur Rashid; Latha Ramalingam; Arwa Al-Jawadi; Naima Moustaid Moussa; **Hanna Moussa**. *Low Dose Radiation, Inflammation, Cancer and Chemoprevention*. *International Journal of Radiation Biology*. Epub 2018 July 2.  
<https://doi.org/10.1080/09553002.2018.1484194>. Impact factor 1.992.
14. Alan Mitchel Lovelace, Al Maqsur Rashid, Wouter C. de Wet, Lawrence W. Townsend, J Wesley Hines, **Hanna Moussa**: *Solar Particle Event Dose Forecasting Using Regression Techniques*. *Space Weather Journal*. Volume 16, Issue 8. Impact factor 2.2. pages 1073-1085. July 24, 2018. <https://doi.org/10.1029/2017SW001773>
15. Latha Ramalingam; Kalhara R. Menikdiwela; Stephani Clevenger; Tochi Eboh; London Allen; Iurii Koboziev; Shane Scoggin; Al Maqsur Rashid; **Hanna Moussa**; Naima Moustaid-Moussa. *Maternal and Postnatal Supplementation of Fish Oil Improves Metabolic Health of Mouse Male Offspring*. *Obesity Journal*. Impact factor 4.042. October 3, 2018. DOI:10.1002/oby.22319.

## **CONFERENCE PROCEEDINGS:**

1. **Moussa, H. M.**; Miller, L. F.: Estimation of Uncertainty in Multigroup Diffusion Theory Results Using Functional Analysis. 1997 ANS Winter Meeting, Albuquerque, NM, November 16-20, 1997. *Transactions of the American Nuclear Society* Vol. 77, pp. 203.
2. **Moussa, H. M.**; Townsend, L. W.; and Miller, L. F.: Determination of Radon Daughter Concentrations Using Air Sampling Technique. 1998 ANS Annual Meeting, Nashville, TN, June 7-11, 1998. *Transactions of the American Nuclear Society* Vol. 78, pp. 39-41.
3. **Moussa, H. M.**; Townsend, L. W.; and Miller, L. F.: Measuring Stopping Power in Air Using Alpha Spectrometer. 1998 ANS Winter Meeting, Washington, DC, November 15-19, 1998. *Transactions of the American Nuclear Society* Vol. 79, pp. 38-39.
4. **Moussa, H. M.**; Eckerman K. F.; and Townsend, L. W.: Estimation of Electron Absorbed Fraction in the Extrathoracic Airways. *44<sup>th</sup> Annual Meeting of the Health Physics Society*, Philadelphia, PA, June 27-July 1, 1999. *Health Physics*. Vol. 76, No 3: S158, 1999.
5. **Moussa, H. M.**; Townsend, L. W.; and Miller, L. F.: Manual Calibration of Liquid Scintillation Counter using Channels Ratio Technique. 1999 ANS Winter Meeting, Long Beach, CA, November 14-18, 1999. *Transactions of the American Nuclear Society* Vol. 81, pp. 42-43.
6. **Moussa, H. M.**; Eckerman K. F.; and Townsend, L. W.: Electron Absorbed Fractions Based on a New Model of the Extrathoracic Airway. *47<sup>th</sup> Annual Meeting of the Radiation Research Society*, Albuquerque, NM, April 29-May 3, 2000. *Radiation Research Society Program and Abstract Book: Abstract P56*, page 80, May 2000.
7. **Moussa, H. M.**; Eckerman K. F.; and Townsend, L. W.: The Effect of the Nasal Vestibule

- (ET1) Sizes and Shape on the Electron Absorbed Fraction. 45<sup>th</sup> Annual Meeting of the Health Physics Society, Denver, Co, June 25-June 29, 2000. Health Physics. Vol. 78, No 6: S116, 2000..
8. **Moussa, H. M.**; Eckerman K. F.; and Townsend, L. W.: Effect of the Anterior Nose Size on the Electron Absorbed Fraction. 2000 ANS Winter Meeting, Washington, DC, November 12-16, 2000. Transactions of the American Nuclear Society Vol. 83, pp. 511-513.
  9. **Moussa, H. M.**; Eckerman K. F.; and Townsend, L. W.: Self-Absorption effects on Electron Absorbed Fraction in the Anterior Nose. 13<sup>th</sup> Symposium on Microdosimetry, Stresa (Lago Maggiore), Italy, May 27 – June 1, 2001.
  10. Townsend, L. W.; Stephens, D. L.; Hoff, J. L.; Braley, G. S.; and **Moussa, H. M.**: Worst Case Solar Energetic Events for Deep Space Missions: 2001 International Conference on Environmental Systems, Orlando, FL, July 9-12, 2001. SAE Paper No. 011CES-292.
  11. Campbell, C. E.; Miller, T. M.; Nichols, T. F; Edwards, J. R.; **Moussa, H. M.**; and Townsend, L. W.: Sensitivity of Solar Energetic Particle Event Doses to Spectral Hardness. 35<sup>th</sup> International Conference on Environmental Systems (ICES), Rome, Italy, July, 11-14, 2005. SAE Technical Paper No. 2005-01-2830. Proceeding on CD ROM. Townsend, L.W.; Moussa, H. M., and Charara, Y.: Characterization of the Lunar Radiation Environment Using CRaTER Detector. 2006 IEEE Aerospace Conference, Big Sky, MT, March 4-11, 2006. Proceeding on CD-ROM.
  12. **Moussa, H. M.**; Eckerman K. F.; and Townsend, L. W.: Energy-Lost Distribution in a Thin Layer of Tissue. 2006 American Radiation Safety Conference & Exposition (51<sup>st</sup> Annual Meeting of the Health Physics Society), Providence, RI, June 25-29, 2006.
  13. Youssef Sharara, L.W. Townsend, and **Hanna Moussa**: LET Spectra of High Energy Proton Beam on A-150: Model Predictions for the CRaTER Detector. International Conference on Environmental System, July 2006, Norfolk, VA, USA Session: Radiation Issue for Space Flight 11.
  14. **Moussa, H. M.**; Eckerman K. F.; and Townsend, L. W.: Effect of Dust Particle Size on Absorbed Fraction in ET1. 2007 HPS Midyear Topical Meeting, Knoxville, TN, January 21-24, 2007.
  15. Charara, Y.; Townsend, L.W.; **Moussa, H. M.**; Hatcher, R.L.; Anderson, J. L., Dudney, C.; McKee, S.A.; McKinnis, P.; and Ottinger, K.: Calculated Energy Loss Spectra in CRaTER Detector for Selected Cosmic Ray Ions. 2007 IEEE Aerospace Conference, Big Sky, MT, March 3-10, 2007. (Proceedings on CD-ROM).
  16. **Moussa, H.M.**; Charara, Y.M.; and Townsend, L.W.: Monte Carlo Simulations of Energy Losses by Space Protons in the CRaTER Detector. 59<sup>th</sup> International Astronautical Congress, Glasgow, Scotland, September 29 – October 3, 2008. (Proceedings on CD-ROM).
  17. **Moussa, H.M.**; and Mark, A. Melanson: Correction to the Effective Dose Published in ICRP 80. Health Physics Society Midyear Topical meeting, Albuquerque, NM, January 24-27, 2010.
  18. **H.M. Moussa**; RP Manager; and KF Eckerman: Beta Dose to Skin as Function of Height. 57<sup>th</sup> Annual Meeting of the Health Physics Society, Sacramento, CA, July 22- 26, 2012.
  19. L.W. Townsend; A.M. Adamczyk; C.M. Werneth; **H.M. Moussa**, and J. P. Townsend: Estimates of Extreme Solar Particle Event Radiation Exposures on Mars. 12<sup>th</sup> ICRS/RPSD

International Conference on Radiation Shielding and 17<sup>th</sup> Topical Meeting on Radiation Protection & Shielding Division of ANS. Nara, Japan, September 2-7, 2012.

**Texas Tech University:**

20. **Moussa Hanna**, and Townsend, L. Progress on Developing Methods to Forecast Radiation Doses from Solar Particle Events. 58<sup>th</sup> Annual Meeting of the Health Physics Society, Madison, Wisconsin. July 7-11, 2013.
21. Lawrence W. Townsend, Anne M. Adanczyk, Charles M. Werneth, **Hanna M. Moussa**, and Jeremy P. Townsend: Extreme Solar Particle Event Radiation on Exposure on Mars. American Nuclear Society (ANS) 2013 National Winter meeting and Technology Expo. Washington D.C 10-14, 2013.
22. **Hanna Moussa**, Lawrence W. Townsend: Solar Particle Event (SPE) Forecasting Using Regression Techniques (**Invited**). 44<sup>th</sup> International Conferences on Environmental System. Tucson, AZ, July 13-17, 2014.
23. **Hanna Moussa**, Lawrence W. Townsend: Dose on Europa's Orbit at '0' degrees Due to Proton Spectra vs. Shield Thicknesses. 59<sup>th</sup> Annual Meeting of the Health Physics Society, Baltimore, MD, July 13- 17, 2014.
24. **Hanna Moussa**, Lawrence W. Townsend: Dose on Europa's Orbit at '0' degrees Due to Electron Spectra vs. Shield Thicknesses. 60<sup>th</sup> Annual Meeting of the Health Physics Society, Indianapolis, IN, July 12- 16, 2015.
25. Kafil A Chowdhury, AL M. Rashid, **Hanna Moussa**; Lawrence W Townsend, University of Tennessee. Dose to Water from Solar Particle Event (SPE). 60<sup>th</sup> Annual Meeting of the Health Physics Society, Indianapolis, IN, July 12- 16, 2015.
26. Al M Rashid, K A Chowdhury, Naima Moustaid-Moussa, Lauren Gollahon, and **Hanna Moussa**. Radiation Effects of Obesity-Associated Breast Cancer. 60<sup>th</sup> Annual Meeting of the Health Physics Society, Indianapolis, IN, July 12- 16, 2015.
27. L.W. Townsend; J.A. Porter; W.C. de Wet; W.J. Smith; L.H. Heilbronn; **H. M. Moussa**: Extreme Solar Event of AD775: Potential Radiation Exposure to Crews in Deep Space. 66<sup>th</sup> International Astronautical Congress (IAC), Jerusalem, Israel, October 21-16, 2015.
28. Curtis Hallman; **Hanna Moussa**. Dose to human leg's skin from infinite beta surface source. 62<sup>nd</sup> Annual Meeting of the Radiation Research Society, Hawaii, Big Island, Waikoloa, October 16-19, 2016.
29. Lawrence W. Townsend; Wouter C. DeWet; Fahad Zaman; Natalie A. McGirl; Lawrence H. Heilbornn; **Hanna Moussa**. Radiation Exposure Estimates for Deep Space Missions Revisited. 47th International Conference on Environmental Systems. July 20, 2017. Charleston, South Carolina, USA on July 16-20th, 2017.