SARAH ASHMEG, DABR, PH.D.

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DEGREES AND PROFESSIONAL CERTIFICATION

PhD SUNY Albany, Nanoscale Science and Engineering 2020
"Metal Filled Carbon Nanotubes in Radiation Therapy: Dose Enhancement Effect"

ABR Therapeutic Medical Physics 2019

MS Duke University, Medical Physics 2014
"Benchmarking Flattening Filter-Free Photons for IMRT/VMAT"

BS King Saud University, Physics 2005

RESEARCH EXPERIENCE

Multi Brain Mets VMAT: Local Control/Complications, UPMC, Pittsburgh
Studying the dose gradient indices for multi-brain metastases treated with non-coplanar VMAT technique, as opposed to CyberKnife. We aim to correlate them with clinical outcome, including local control and complications.

Carbonized Polymers and Radiation Effect, UPMC/UPitt, Pittsburgh
In collaboration with UPitt, we created nanocarbons via a laser carbonization of polymer films. Currently, we are studying the effect of these films when placed in the path of megavoltage x-ray beams.

Cardiac SBRT Radio-Ablation, UPMC, Pittsburgh
The goals of the present research are to develop and improve our understanding of how SBRT can be developed into a safe, non-invasive therapy to manage lethal ventricular arrhythmia.

Carbon Nanotubes and Radiation Dose Enhancement
We have been studying the effect of metallized and pure carbon nanotubes in enhancing the radiation dose in external beam therapy. The objective of this effort is increased dose to the tumor site while minimizing dose to the surrounding healthy tissue. The dose increase was measured using an ion chamber and EBT film, for x-ray energies ranging from 120 kVp to 10 MV. Various setups, phantoms and materials are being used.

Evaluation of Delta4's Anatomy software
We have evaluated the accuracy of the Delta4's Anatomy software by comparing the calculated dose to ion chamber, film measurements and Presage 3D dosimeter. A poster of the work was presented in AAPM 2014.

Benchmarking FFF photons of different energies for IMRT/VMAT for commissioning of Varian TrueBeam LINACS
Graduate research in using TG119 to test the commissioning of flattening filter-free photons. Measurements were conducted using pinpoint ion chamber, films and a pseudo 3D device (Delta4).

CLINICAL EXPERIENCE

University of Pittsburgh Medical Center, Pittsburgh, PA July 2020 - Current
***Clinical Assistant Professor**, Radiation Oncology*
Providing clinical physics services for UPMC's Radiation Oncology department at UPMC Hillman Cancer Center at St. Clair, including SBRT, 4D-gated RT, IMRT/VMAT, DIBH, etc.

Beth Israel Deaconess Medical Center, Boston, MA May 2017 - July 2020
***CyberKnife Physicist**, Radiation Oncology*
CyberKnife SRS & SBRT planning and QA in addition to conventional external beam radiotherapy.

Albany Medical Center, Albany, NY Sep 2014 – May 2017
***Volunteer Medical Physicist**, Radiation Oncology*

King Faisal Specialist Hospital and Research Center,
Riyadh, Kingdom of Saudi Arabia Sep 2006 – Dec 2009
***Junior Medical Physicist**, Biomedical Physics Department*

PUBLICATIONS AND PRESENTATIONS

S Wadi-Ramahi, M Tavakoli, B Elgohari, S Ashmeg "Conformality Indices and Brain Dose Objective for Multi-Lesion Brain Single Isocenter Linac-Based Stereotactic Radiosurgery", International Journal of Radiation Oncology*Biology*Physics, 2023

S Wadi-Ramahi, M Tavakoli, B Elgohari, S Ashmeg "Conformality Indices and Brain Dose Objective for Multi-Lesion Brain Single Isocenter Linac-Based Stereotactic Radiosurgery", ASTRO, 2023

F Yang, R Carter, S Ahmed, T Plautz, P Dubrowski, S Wadi-Ramahi, S Ashmeg, F Ascoli, D Wakefield, J Adamson and B Li "A Longitudinal Telehealth Curriculum for Radiation

Oncology Centers in Low and Middle-Income Countries Transitioning from 2D to 3D External Beam Radiation Therapy", Cancer Epidemiology Biomarkers & Prevention, 2021

S Ashmeg, R Lalonde "Carbon Nanotubes Role in kV x-rays: Enhancement or Diminution?", AAPM 2021

S Ashmeg, P Zygmanski, T Gayle, E Eisenbraun, E Holupka "Multiwalled Carbon Nanotubes and Radiation Dose Enhancement", AAPM 2020

S. Ashmeg, M. Rodriguez, D. Gregory, A. Parbatani, E. Eienbraun "Metal Filled Carbon Nanotubes for Targeted Radiation Therapy: A Feasibility Study", International Journal of Science and Engineering Applications, Volume 9 - Issue 06, 87 - 90, 2020

Sarah Ashmeg, Eric Eisenbraun, Michael Fasullo, Muhammad Afghan, Jahangir Satti, Umar Baharom, "Radiation Dose Enhancement Using Copper Filled Carbon Nanotubes", AAPM 2017

Sarah Ashmeg, Eric Eisenbraun, "Metal Filled Carbon Nanotubes for Targeted Radiotherapy: A Feasibility Study", AAPM 2017, AVS Albany Chapter meeting 2016 & Boston CIRC conference 2016.

Sarah Ashmeg and Eric Eisenbraun "Radioisotope Filled Carbon Nano-Tubes Feasibility for Targeted Radiotherapy", AVS conference 2016.

Feryan Ahmed, Sarah Ashmeg and Eric Eisenbraun, "Metalized Carbon Nanotubes as a Conductive Material for Energy Storage Devices" J. Mater.Res. 31(15), 2016.

Sarah Ashmeg, Youni Zhang, Jennifer O'Daniel, Fang-Fang Yin and L Ren "Evaluation of a Patient Specific QA Tool Based on TG119", Riyadh's ICRM 2014 & AAPM 2014

Sarah Ashmeg,J Jackson, Youni Zhang, Mark Oldham, Fang-Fang Yin and L Ren "A Multi-Dimensional Measurements Comparison to Analyze a 3D Patient Specific QA Tool", AAPM 2014

Sarah Ashmeg, Jennifer O'Daniel, Qijin Wu and Fang-Fang Yin "Benchmarking Flattening-Filter Free Photons for IMRT/VMAT", AAPM 2012.

PROFESSIONAL MEMBERSHIPS

Medical Physics for World Benefit (MPWB), 2015 - Present

American Association of Physicists in Medicine (AAPM), 2008 – Present

Radiating Hope, 2023 – Present

Radiation Research Society (RRS), 2023 - Present

PROFESSIONAL SERVICES

POWV Chapter of AAPM
President, Current
President Elect, 2023 – 2024

UPMC Medical Physics Residency
Assistant Director, Current

UPMC Physics Group
Physics Peer Review: lead physicist
DEP Discussion Group: member
Strategic Planning: member

MPWB, 2021 – Current
Organize and moderate webinars and prepare and distribute MCQs for attendants.

RCC, 2021- Current
Moderate and teach sessions and courses, dedicated to professionals in LMI Countries.

SUNY Polytechnic Institute, 2022
Invited as a panelist for a Women in STEM event.

SCHOLARSHIPS FOR GRADUATE STUDIES

Duke University 2011 - 2014

King Faisal Specialist Hospital and Research Center/ SACM 2010 - 2017

SKILLS

Microscopy and Spectroscopy Tools: TEM, SEM, EDS and XPS.

Radiation Oncology: Varian, ECLIPSE, Aria, CyberKnife, Mosaiq.