

R. Lyle Hood, Ph.D.

Office EB 3.04.28
Department of Mechanical Engineering

(210) 458-7909
lyle.hood@utsa.edu

EDUCATION

Doctor of Philosophy, Biomedical Engineering August 2013
School of Biomedical Engineering and Sciences
Virginia Tech-Wake Forest

Dissertation: *Development of a Fiberoptic Microneedle Device for Simultaneous Co-Delivery of Fluid Agents and Laser Light with Specific Applications in the Treatment of Brain and Bladder Cancers*

Master of Science, Biomedical Engineering August 2011
School of Biomedical Engineering and Sciences
Virginia Tech-Wake Forest

Thesis: *Development of a Hollow-Core Fiberoptic Microneedle Device for the Treatment of Invasive Bladder Cancer*

Bachelor of Science, Biomedical Engineering May 2009
University of Houston

Thesis: *Designing and Fabricating a Prostate Model in Perma-Gel Ballistics Gelatin*

PROFESSIONAL EXPERIENCE

The University of Texas at San Antonio August 2016-Current
Department of Mechanical Engineering

Assistant Professor: Established a research program focused on developing new and improving existing medical device systems, with active projects in the fields of airway management, photothermal therapies, MEMS/NEMS, endoscopes, implantables, improved imaging, and controlled delivery.

The University of Texas at San Antonio January 2019-Current
Department of Electrical and Computer Engineering

Adjunct Professor: Mentored and advised both undergraduate and graduate students in the ECE program. Collaborated on innovative research with several ECE faculty.

Bexar Biomedical, LLC November 2019-Current
Founding Member: Led the design and development of an innovative drug delivery port for intrathecal chronic pain management.

Galaxy CCRO, Inc. October 2018-Current
Member of Scientific Advisory Board: Aided in networking and recruiting medical doctors for prospective clinical trial and advised on technical development planning.

DialanInsect, Inc. February 2018-May 2019
Technical Advisor: Successfully recruited investor funding, advised on product development and testing plans, served as the Principal Investigator for a Regional NSF I-CORPS grant, and contributed on grant writing.

The University of Texas Health Science Center in San Antonio June 2017-Current
Department of Emergency Medicine
Adjunct Assistant Professor: Coordinated research efforts with department faculty to explore new research directions in interventional device development.

AmMech Engineering, LLC June 2017-May 2019
Technical Advisor: Provided guidance on product development planning, served as the Principal Investigator for a Regional NSF I-CORPS grant, and contributed on grant writing.

UTSA/UT Health SA May 2017-Current
Joint Biomedical Engineering Graduate Program
Core Faculty: Mentored graduate students in the Biomedical Engineering graduate program, attended faculty meetings, and participated in program seminars and symposia.

Houston Methodist Research Institute March 2014-August 2016
Nanomedicine Department
Postdoctoral Fellow: Developed implantable drug delivery systems incorporating parallel arrays of nanochannels for sustained, constant delivery of biomolecules. Contributed writing and data on multiple successful grants amounting to over \$4M in funding.

Virginia Tech-Wake Forest August 2009-March 2014
School of Biomedical Engineering and Sciences
Graduate Research Assistant/Postdoctoral Researcher: Conducted research in the Biomedical and Optical Devices Laboratory. My work focused on experimental investigation of microfluidics, fiberoptics, nanomedicine, and targeted chemotherapy.

AWARDS AND HONORS

- UTSA Faculty Mentor of the Year Award for Undergraduate Research and Creative Inquiry, 2019
- Given on-field recognition during UTSA Football Game following student nomination for supporting student-athlete academic achievement, 2019
- 2nd Place in NanoEngineering for Medicine and Biology Conference Poster Contest, 2016
- HMRI Department of Nanomedicine's Award for Outstanding Translational Research, 2016
- Best Student/Resident Paper at ASLMS, 2014
- TechConnect Innovation Awardee, 2013
- Best Doctoral Poster Presentation: Torgersen Awards, 2013
- Best Masters Podium Presentation, SBES Symposium, 2011

- ASLMS Travel Grant Recipient, 2011, 2012, 2014
- John Cato Travel Grant Recipient, 2011
- Pratt Scholar, 2009
- Farber-Economon European Travel Scholarship recipient: essay contest winner of a 3 week, all-expenses paid trip to Europe, 2008

PEER REVIEWED ARTICLES

1. Berard, D., Bascos, G., Harb, A., Navarro, J.D., Feng, Y., De Lorenzo, R., **Hood, R.L.**, Restrepo, D., *Novel Endotracheal Tube Design Utilizing Unique Geometries*, Journal of the Mechanical Behavior of Biomedical Materials, 2020, In Preparation
2. Manrique-Bedoya, S., Abdul-Moqueet, M., Lopez, P. Gray, T., Disiena, M., Kwee, S., Tang, L., **Hood, R.L.**, Feng, Y., Large, N., Mayer, K.M., *Multiphysics Modeling of Plasmonic Photothermal Heating Effects in Gold Nanoparticles and Nanoparticle Arrays*, Journal of Physical Chemistry, 2020, In Review
3. Akhter, F., Bascos, G.N., Canelas, M., Griffin, B., **Hood, R.L.**, *Mechanical Characterization of a Fiberoptic Microneedle Device for Laser and Drug Codelivery*, Journal of the Mechanical Behavior of Biomedical Materials, 2020, In Review
4. Jain, P., Schoppe, A., Akhter, F., **Hood, R.L.**, De Lorenzo, R., *Airway Management and the Availability of Suction Devices for Pre-Hospital Combat Casualty Care: A Systematic Review*, Prehospital and Disaster Medicine, 2020, In Revision
5. Hernandez-Hinojosa, E., Nawn, C.D., Abbott, C., Astorga, D., Jain, P., Restrepo, D., **Hood, R.L.**, *Bioinspired Robotic Exoskeleton for Endotracheal Intubation*, Journal of Materials Research and Technology, 2020, In Review
6. **Hood, R.L.**, Rubinsky, B., *Medical Devices for Economically Disadvantaged People and Populations: Perspective Problems and Prospective Solutions*, Journal of Medical Devices, 14(1): 010301, 2020
7. Akhter, F., Schoppe, A., Navarro, O., Carroll, C., Jain, P., Pescador, R., Feng, Y., De Lorenzo, R., **Hood, R.L.**, *Characterization of a novel emergency suction device for combat medics and civilian first responders*, Journal of Medical Devices, 13(4): 041004, 2019
8. Trani, N.D., Jain, P., Bruno, G., Chua, C.Y.X., Ho, J.S., **Hood, R.L.**, Smith, Z.W., Ballerini, A., Grattoni, A. *Nanofluidic microsystem for sustained intraocular delivery of therapeutics*, Nanomedicine: Nanotechnology, Biology, and Medicine, Vol 16, pp. 1-9, Cover Article, 2019
9. Chua, C. Y. X., Jain, P., Ballerini, A., Bruno, G., **Hood, R.L.**, Gupte, M., Gao, S., Di Trani, N., Susnjar, A., Shelton, K., Bushman, L.R., Folci, M., Filgueira, C.S., Marzinke, M.A., Anderson, P.L., Hu, M., Nehete, P., Arduino, R.C., Sastry, J.K., Grattoni, A., *Transcutaneously refillable nanofluidic implant achieves sustained level*

of tenofovir diphosphate for HIV pre-exposure prophylaxis, Journal of Controlled Release, 286, pp. 315-325, 2018

10. Bruno, G., Trani, N.D., **Hood, R.L.**, Zabre, E., Filgueira, C.S., Canavese, G., Jain, P., Smith, Z., Demarchi, D., Hosali, S., Pimpinelli, Ferrari, M., Grattoni, A., *Unexpected behaviors in molecular transport through size-controlled nanochannels down to the ultra-nanoscale*, Nature Communications, 9:1682, 2018
11. **Hood, R.L.**, Hood, G.D., Ferrari, M., Grattoni, A., *Pioneering Medical Advances through Nanofluidic Implantable Technologies*, Invited Review to Wiley Interdisciplinary Reviews of Nanomedicine & Nanobiotechnology, **Invited Review**, 2017
12. Filgueira, C., Nicolov, E., **Hood, R.L.**, Ballerini, A., Garcia-Huidobro, J., Lin, J., Fraga, D., Sabek, O., Gaber, A., Phillips, K., Grattoni, A., *Sustained zero-order delivery of GC-1 from a nanochannel membrane device alleviates metabolic syndrome*, International Journal of Obesity, 2016, 40 (11), 1776-1783
13. **Hood, R.L.**, Bruno, G., Jain, P., Anderson, J., Wolfe, T., Schmulen, J., Quini, C., Butler, B., Krishnan, S., Grattoni, A., *Nanochannel Implants for Minimally-Invasive Insertion and Intratumoral Delivery*, Journal of Biomedical Nanotechnology, 2016, 12(10), 1907-1915.
14. Ballerini, A., Filgueira, C.S., Nicolov, E., Jain, P., Bruno, G., **Hood, R.L.**, Scaglione, F., Grattoni, A., *Sustained Delivery of Tamoxifen for the Prevention of ER+ Breast Cancer Using a Nanofluidic Delivery Platform*, Drug Delivery Letters, 2016, 6 (2), 127-133
15. Bruno, G. and Geninatti, T., **Hood, R.L.**, Fine, D., Schmulen, J., Hosali, S., Ferrari, M., Grattoni, A., *Leveraging electrokinetics for the active control of dendritic fullerene-1 release across a nanochannel membrane*, Nanoscale, 2015, 7(12): 5240-5248
16. Geninatti, T. and **Hood, R.L.**, Bruno, G., Nicolov, E., Ziemys, A., Grattoni, A., *Sustained Administration of Hormones Exploiting Nanoconfined Diffusion through Nanochannel Membranes*, **Invited Paper to Materials**, 2015, 8(8): 5276-5288
17. Thomas, G. and Bruno, G., Barile, B., **Hood, R.L.**, Farina, M., Schmulen, J., Canavese, G., Grattoni, A., *Impedance Characterization, Degradation, and In Vitro Biocompatibility for Platinum Electrodes on BioMEMS*, Biomedical Microdevices, 2015, 17(1): 1-11
18. **Hood, R.L.**, Andriani, R.T. Jr., Ecker, T., Robertson, J.L., Rylander, C.G., *Thermally Augmented Convection-Enhanced Drug Delivery Through the Fiberoptic Microneedle Device*, Engineering, 2015, 1(3): 344-350

19. **Hood, R.L.**, Andriani, R.T. Jr., Emch, S., Robertson, J.L., Rylander, C.G., Rossmeisl, J.H. Jr., *Fiberoptic Microneedle Device Facilitates Volumetric Infusate Dispersion during Convection-Enhanced Delivery in the Brain*, *Lasers in Surgery and Medicine*, 2013, 45(7): 418-26
20. **Hood, R.L.**, Rossmeisl, J.H. Jr., Andriani, R.T. Jr., Wilkinson, A.R., Robertson, J.L., Rylander, C.G., *Intracranial hyperthermia through local photothermal heating with a fiberoptic microneedle device*, *Lasers in Surgery and Medicine*, 2013, 45(3): 167-174
21. **Hood, R.L.**, Carswell, W., Rodgers, A., Kosoglu, M.A., Rylander, M., Grant, D., Robertson, J., Rylander, C., *Spatially controlled photothermal heating of bladder tissue through single-walled carbon nanohorns delivered with a fiberoptic microneedle device*, *Lasers in Medical Science*, 2013, 28(4):1143-50
22. **Hood R.L.**, Kosoglu M.A., Parker M., Rylander C.G., *Effects of Microneedle Design Parameters on Hydraulic Resistance*, *Journal of Medical Devices*, 2011, 5(3): 31012-31016
23. Kosoglu, M.A., **Hood, R.L.**, Rylander, C.G, *Mechanical strengthening of fiberoptic microneedles using an elastomeric support*, *Lasers in Surgery and Medicine*, 2012, 44(5):421-28
24. Kosoglu M.A., **Hood R.L.**, Rossmeisl J.H., Jr., Grant D.C., Xu Y., Robertson J.L., Rylander M.N., Rylander C.G.. *Fiberoptic microneedles: novel optical diffusers for interstitial delivery of therapeutic light*. *Lasers in Surgery and Medicine*, 2011, 43(9):914-920.
25. Kosoglu, M.A., **Hood, R.L.**, Chen, Y., Xu, Y. Rylander, M.N., Rylander, C.G., *Fiberoptic Microneedles for Transdermal Light Delivery: Ex Vivo Porcine Skin Penetration Experiments*. *Journal Biomechanical Engineering*, Sep 2010, 132(9):091014.

CONFERENCE PAPERS AND OTHER PUBLICATIONS

1. Portillo, D., Copeland, G., Vu, B.H., Kaur, S., Navarro, O., Pineda G., Seifi, S., Das, N., DeArmond, D.T., Calhoon, J., **Hood, R.L.**, *Mitigating Complications Caused by Intravenous Therapy: The IV Patency Monitoring Device*, *Design Of Medical Devices Conference*, 2020, In Press
2. Ballestros, N., Garcia, S., **Hood, R.L.**, Hood, G.D., *Comparision of Kinematic Wearables for Energy Harvesting*, *UTSA Journal of Undergraduate Research and Scholarly Works*, Vol 6., 2019
3. Falcon, N.O., Ranjbar, S., Cisneros, E., Vu. B., Schoppe, A., Sanchez, P., Jin, Y., Ye, J., Feng, Y., Kaushik, D., **Hood, R.L.**, *Innovative Computer Vision Approach to 3D Bladder Model Reconstruction from Flexible Cystoscopy*, *Therapeutics and*

Diagnostics in Urology 2019. Vol. 10852. International Society for Optics and Photonics, 2019

4. De Lorenzo, R.A., **Hood, R.L.**, Jain, P., Pescador, R., Lasch, M., Feng, Y., *Final Report: Summary of Findings and Recommendations for Suction Devices for Management of Prehospital Combat Casualty Care Injuries*, Defense Technical Information Center, 2017, Technical Report
5. Harbuck, J., Macias, A., Weaver, J., Weber, J., **Hood, R.L.**, *The Design, Analysis, Build and Test of a Vaccine Management and Preservation System (VacMAPS) to Reduce Vaccine Waste in Healthcare Facilities*, UTSA Undergraduate Research Journal, Vol. 2, 2017, Published Abstract
6. **Hood, R.L.**, *Development of a Fiberoptic Microneedle Device for Simultaneous Co-Delivery of Fluid Agents and Laser Light with Specific Applications in the Treatment of Brain and Bladder Cancers*, August 2013, Dissertation
7. **Hood, R.L.**, Ecker, T.E., Andriani, R.T. Jr., Robertson, J.L., Rossmeisl, J.H. Jr., Rylander, C.G., *Augmenting convection-enhanced delivery through simultaneous co-delivery of fluids and laser energy with a fiberoptic microneedle device*, Proc. SPIE 8576, Optical Fibers and Sensors for Medical Diagnostics and Treatment Applications XIII, 85760G, March 2013, Conference Paper
8. **Hood, R.L.**, *Development of a Hollow-Core Fiberoptic Microneedle Device for the Treatment of Invasive Bladder Cancer*, August 2011 Masters' Thesis
9. **Hood, R.L.**, *Designing and Fabricating a Prostate Model in Perma-Gel Ballistics Gelatin*, University of Houston, 2008. Undergraduate Thesis
10. Mathuria, N., Wang, J., **Hood, R.L.**, Gilbert, A.L., Schulz, D.G., Rao, L., Siou, J., Naware, M., Panescu, D., Shih, H.T. Nagueh, S.F., Khoury, D., *Intramural Electrical Dyssynchrony in Pacing-Induced Congestive Heart Failure*, Journal of Cardiac Failure, 2007, 13(6), p.S127, Published Abstract

INVITED PRESENTATIONS

1. **Hood, R.L.**, *Mechanical Engineering and the MDI Lab*, UTSA PREP, August 1, 2019, Invited Lecture
2. **Hood, R.L.**, *Introduction to Mechanical Engineering, Medical Device Design, and the MDI Lab*, UTSA Engineering Summer Camp, June 19, 2019, Invited Seminar
3. **Hood, R.L.**, *Introduction to Mechanical Engineering, Medical Device Design, and the MDI Lab*, BASIS San Antonio, Shavano Campus, November 2018, Invited Seminar

4. **Hood, R.L.**, *Introduction to Mechanical Engineering and Medical Device Design*, PREP Summer Program, July 2018, Invited Seminar
5. **Hood, R.L.**, *Mechanical Engineering and Medical Device Design*, UTSA Summer Engineering Camp, June 2018, Invited Seminar
6. **Hood, R.L.**, *Nanofluidic Implantables for Drug Delivery and Personalized Medicine*, San Antonio Nanotechnology Forum, April 2018, Invited Talk and Panelist
7. **Hood, R.L.**, *Therapeutic medical device platforms for precision medicine*, University of Texas at San Antonio Department of Biomedical Engineering, September 2016, Invited Seminar
8. **Hood, R.L.**, *PostDoc 101*, University of Houston Career Center, March 2016, Invited Seminar
9. **Hood, R.L.**, Grattoni, A., *Innovative BioMEMS devices leveraging nanofluidic control for drug delivery and cell transplantation*, Nanotek 2015, San Antonio, TX, November 2015, Invited Podium
10. **Hood, R.L.**, *Career Tracks: Aging with Academia*, Biomedical Engineering Society Group at University of Houston, October 2015, Invited Seminar
11. **Hood, R.L.**, Jain, P., Grattoni, A., *Silicon Nanochannel Membranes for Tunable Controlled Release*, University of Texas' Department of Veterinary Sciences at the Michale E. Keeling Center for Comparative Medicine and Research, September 2015, Invited Seminar
12. **Hood, R.L.**, *How to Postdoc: 10 Years Into Higher Learning*, University of Houston, Biomedical Engineering Department, April 2015, Invited Seminar
13. Rylander, C.G., Andriani, R.T. Jr., **Hood, R.L.**, Dewitt, M., Pekkanen, A., Robertson, J.L., Rylander, M.N., *Fiberoptic Microneedles for Nanoparticle Targeted Photothermal Therapy of Invasive Bladder Cancer*, World Congress of Biomechanics 2014, July 2014, Invited Podium
14. **Hood, R.L.**, Ecker, T.E., Andriani, R.T. Jr., Lombardi, C., Chen, Y., Robertson, J.L., Rossmeisl, J.H. Jr., Rylander, C.G., "Fiberoptic Microneedle Device for Convection Enhanced Drug Delivery to Malignant Glioma," Metropolitan Biophotonics Symposium, Washington D.C., March 2012, Invited Podium

CONFERENCE PRESENTATIONS

1. Bascos, G., Berard, D., Trevino, I., Campbell, D., Feng, Y., Lorenzo, R., Restrepo, D., **Hood, R.L.**, *Novel Designs in Endotracheal Intubation*, Annual Biomedical Engineering Society Conference 2019., Philadelphia, PA, Presented October 19th, 2019, Poster

2. Portillo, D.J., Veraza, R., **Hood, R.L.**, Bunegin, L., *A Novel, Portable, and Combat-Ready Device for Limb Recovery and Preservation*, Biomedical Engineering Society Annual Conference 2019, Philadelphia, PA, October 19th, 2019, Podium
3. Gale, G., Jain, P.R., Rathbone, C., Restrepo, D., **Hood, R.L.**, *A Novel and Active Bandage for Accelerating the Healing of Chronic Wounds*, Annual Biomedical Engineering Society Conference 2019, Philadelphia, PA, October 19th 2019, Poster
4. Jain, P., Gale, J., Schoppe, A., McGovern, M., Zimmern, K., Zwiener, A., Guda, T., **Hood, R.L.**, *Developing a Biodegradable 3D-Printed Polymer Implant for Controlled Localized Drug Delivery*, Annual Biomedical Engineering Society Conference 2019, Philadelphia, PA, Presented October 18th, 2019, Poster
5. Portillo, D.J., Vu, B.H., Navarro, O.A., Kaur, S., Pineda, G.L., Seifi, S., Das, N.A., DeArmond, D.A., Calhoon, J.H., **Hood, R.L.**, *An Innovative Alert System for Intravenous Catheter Complications: The IV Patency Monitoring Device*, Biomedical Engineering Society Annual Conference 2019, Philadelphia, PA, October 18th, 2019, Poster
6. Berard, D., Trevino, I., Campbell, D., Feng, Y., De Lorenzo, R., Restrepo, D., **Hood, R.L.**, *Novel Endotracheal Tube Design Utilizing Novel Architected Materials*, Annual Biomedical Engineering Society Conference 2019, Philadelphia, PA, Presented October 18th, 2019, Poster
7. Akhter, F., Mehta, J.N., Bass, F., Griffin, B., Harb, A., Canelas, M., Rylander, C.G., **Hood, R.L.**, *Fiber Optic Microneedle Device for Co-delivery of Drug and Laser Energy*, BMES 2019 Annual Conference, Philadelphia, PA, October 17th, 2019, Poster
8. Kent, D., Zelaya, L., Brothers, R., Berard, D., **Hood, R.L.**, *Sensor Integration into Novel Endotracheal Intubation Platform*, Hispanic Engineer National Achievement Awards Conference, 2019, Lake Buena Vista, FL, Presented September 27th, 2019, Poster
9. Berard, D., Trevino, I., Campbell, D., Feng, Y., De Lorenzo, R., Restrepo, D., **Hood, R.L.**, *Novel Endotracheal Tube Design Utilizing Novel Architected Materials and Feedback Sensors*, Military Health System Research Symposium 2019, Kissimmee, FL, Presented August 21th, 2019, Poster
10. Zelaya, L., Kent, D., Brothers, R., Berard, D., **Hood, R.L.**, *Novel Endotracheal Tube Systems*, Annual CIMA-LSAMP Undergraduate Research Symposium, 2019, San Antonio, TX, Presented August 9th, 2019, Poster
11. Akhter, F., Schoppe, A., Navarro, O., Carroll, C., Jain, P., Pescador, R., De Lorenzo, R., Adams, B. D., **Hood, R.L.**, *A Portable Airway Suction Device for Combat*

Medics, Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C) 2019, Seven Springs, PA, Presented June 27th, 2019, Poster

12. Portillo, D.J., Vu, B.H., Valdes, J., Seifi, S., Routsas, Y.P., Headrick, C., Trevino, I., DeArmond, D.A., Calhoon, J.H., **Hood, R.L.**, *Intravenous Patency Monitoring Device*, The San Antonio Military Health System and Universities Research Forum (SURF) 2019, San Antonio, TX, June 13th, 2019, Podium
13. Nawn, C., Hernandez, E., Abbott, C., Astora, D., Robinson, S., Chavez, R., Jain, P., **Hood, R.L.**, *Endotracheal Intubation Performance Comparison of a Novel Digital Extenders Technique Versus Direct Laryngoscopy and Tactile Intubation*, The San Antonio Military Health System and Universities Research Forum (SURF) 2019, San Antonio, TX, June 13th, 2019, Poster
14. Jain, P.*, Schoppe, A.*, Gale, J., Zimmern, K., Zwiener, A., Guda, T., **Hood, R.L.**, *Developing a Biodegradable 3D-Printed Polymeric Implant for Controlled, Localized Drug Delivery*, The San Antonio Military Health System and Universities Research Forum (SURF) 2019, San Antonio, TX, USA, June 13th, Poster
15. Contreras, S.O., Ahn, E., Jain, P., Nawn, C., **Hood, R.L.**, *Microfluidic Haptic Feedback Sensor for Airway Management*, San Antonio Universities Research Forum (SURF) Conference 2019, San Antonio, TX, Presented June 13th, 2019, Poster
16. Akhter, F., Carroll, C., Schoppe, A., Navarro, O., De Lorenzo, R., **Hood, R.L.**, *Development of a Portable Airway Suction Device for Combat Medics*, San Antonio Universities Research Forum (SURF) Conference 2019, San Antonio, TX, Presented June 13th, 2019, Poster
17. Berard, D., Trevino, I., Campbell, D., Feng, Y., De Lorenzo, R., Restrepo, D., **Hood, R.L.**, *Novel Endotracheal Tube Design Utilizing Shape Memory Materials and Feedback Sensors*, Annual SAMHS and Universities Research Forum 2019, San Antonio, TX, Presented June 13th, 2019, Poster
18. Jain, P.*, Schoppe, A.*, Gale, J., Zimmern, K., Zwiener, A., Guda, T., **Hood, R.L.**, *Developing a Biodegradable 3D-Printed Polymeric Implant for Controlled, Localized Drug Delivery*, IIMS/CTSA Frontiers of Translational Science Research Day. San Antonio, TX, USA, May 1st, 2019, Poster
19. Jain, P., Schoppe, A., Gale, J., Zimmern, K., Zwiener, A., Guda, T., **Hood, R.L.**, *Developing a Biodegradable 3D-Printed Polymeric Implant for Controlled, Localized Drug Delivery*, Biomedical Research Symposium at UTSA 2019. San Antonio, TX, USA. March 1st, 2019, Poster
20. Vu, B.H., Portillo, D.J., Seifi, S., Navarro, O.A., Kaur, S., Pineda, G., Fallon, Z., DeArmond, D.A., Calhoon, J.H., **Hood, R.L.**, *Intravenous Patency Device*,

Biomedical Research Symposium at UTSA 2019, San Antonio, TX, March 1st, 2019, Poster

21. Falcon, N.O., Ranjbar, S., Cisneros, E., Vu, B., Schoppe, A., Sanchez, P., Jin, Y., Ye, J., Feng, Y., Kaushik, D., **Hood, R.L.**, *Innovative Computer Vision Approach to 3D Bladder Model Reconstruction from Flexible Cystoscopy*, SPIE BIOS 2019, San Francisco, CA, February 2019, Podium
22. Gale, J., Schoppe, A., Aguilera, I., Jain, P., **Hood, R.L.**, *Evaluating the Biodegradable Capabilities of 3D-Printed Polymeric Drug Delivery Implants*, Biomedical Engineering Society Annual Conference 2018, Atlanta, GA, October 2018, Poster
23. Durham, B., Afanador, A., Alapag, A., Amaro, B., **Hood, R.L.**, *Micro-Feeding System (MFS) for Cell Culture Studies*, Biomedical Engineering Society Annual Conference 2018, Atlanta, GA, October 2018, Poster
24. Akhter, F., Schoppe, A., Navarro, O., Carroll, C., Adams, B., Feng, Y., De Lorenzo, R., **Hood, R.L.**, *A Portable Suction System for Military and Civilian First Responders*, Biomedical Engineering Society Annual Conference 2018, Atlanta, GA, October 2018, Poster
25. Abbott, C., Afanador, A., Robinson, S., Nawn, C., Hernandez, E., Orrostieta, R., Contreras, S.O., Jain, P., **Hood, R.L.**, *Digital Extenders Platform for Augmented Intubation*, Biomedical Engineering Society Annual Conference 2018, Atlanta, GA, October 2018, Poster
26. Jain, P., Schoppe, A., Gale, J., **Hood, R.L.**, *A Biodegradable, 3D-Printed Implantable for Minimally-Invasive Controlled Delivery*, Biomedical Engineering Society Annual Conference 2018, Atlanta, GA, October 2018, Poster
27. **Hood, R.L.**, *Novel Platforms for Precise, Localized Drug Delivery and Laser Irradiation*, World Congress of Biomechanics, June 2018, Dublin, Ireland, Poster
28. Nawn, CD, Wahrmond, C, Afanador, A, Abbott, C., Robinson, S., and **Hood, R.L.**, *Digital Extenders Platform for Augmented Digital Intubation*, World Congress of Biomechanics, June 2018. Dublin, Ireland, Poster
29. Wahrmond, C., Robinson, S., Nawn, CD., Abbott, C., Afanador, A., Orrostieta, R., Contreras, S.O., Jain, P., De Lorenzo, R.A., Ryan, K.L., Blackburn, M.B. and **Hood, R.L.**, *Design of Digital Extenders Platform for Augmented Digital Intubation*, San Antonio Military Health System & Universities Research Forum 2018. June 2018. San Antonio, TX, Poster
30. Navarro, O., Schoppe, A., Akhter, F., Berard, D., Alapag, A., Lasch, M., Liu, E., Pescador, R., De Lorenzo, R., Adams, B., Feng, Y., **Hood, R.L.**, *Design and Development of a Portable Airway Suction Device for First Responders in Military*

and Civilian Emergencies, San Antonio Military Health System & Universities Research Forum 2018, San Antonio, June 2018, Podium

31. Akhter, F., Lasch, M., Liu, E., Pescador, R., Clark, B., Berard, D., Sanchez, N., Alapag, A., DeLorenzo, R.A., Adams, B.D., **Hood, R.L.**, Feng, Y., *Next Generation Airway Suction System for First Responders in Military and Civilian Emergencies*, Biomedical Engineering Society Annual Conference 2017, Phoenix, AZ, October 2017, Podium
32. Afanador, A., Abbott, C., Robinson, S., Wahrmund, C., Nawn, C.D., **Hood, R.L.**, *Design of Digital Extenders Platform for Augmented Digital Intubation*. Biomedical Engineering Society Annual Conference 2017, Phoenix, AZ, October 2017, Poster
33. Jain, P., **Hood, R.L.**, Ballerini, A., Bruno, G., Grattoni, A., *Nanochannel Delivery System for Controlled Release of Ocular Drugs to Target Increased Intraocular Pressure*, Biomedical Engineering Society Annual Conference 2017, Phoenix, AZ, October 2017, Poster
34. Navarro, O., Bah, O., Akhter, F., Schoppe, A., **Hood, R.L.**, *The development of a Combat-Ready Suction Device*. UTEP LSAMP Conference, El Paso, TX, September 8, 2017, Poster
35. Navarro, O., Bah, O., **Hood, R.L.**, *The development of a Combat-Ready Suction Device*. CIMA LSAMP Symposium, San Antonio, TX, August 3, 2017, Poster
36. Bah, O., Navarro, O., Akhter, F., **Hood, R.L.**, *Control System Design for a Military Suction Device using Arduino-Uno Micro-controller*. CIMA LSAMP Symposium, San Antonio, TX, August 3, 2017, Poster
37. Navarro, O., Bah, O., **Hood, R.L.**, *The development of a Combat-Ready Suction Device*. TRiO Symposium, San Antonio, TX, July 21, 2017, Poster
38. Akhter, F., Lasch, M., Liu, E., Pescador, R., De Lorenzo, R., Adams, B.D., **Hood, R.L.**, Feng, Y., *Improved Suction Device for Airway Management in Emergency and Clinical Scenarios*, SB³C 2017, Tuscon, AZ, June 24th, Podium
39. Chua, C. Y. X., Jain, P., Gilbert, A., Filgueira, C. S., Bruno, G., Ballerini, A., Smith, Z., Ho, J., **Hood, R. L.**, Grattoni, A., *Implantable Nanochannel Platform for Intratumoral Immunotherapeutic Delivery*. The Houston Methodist Academy Postdoctoral and Trainee Association Winter Science Symposium 2016. Houston, TX, USA. Dec 4th. Poster
40. **Hood, R.L.**, Jain, P., Grattoni, A., *Leveraging Implantable Nanofluidic Technology for Longterm HIV Prophylaxis*, BMES 2016 Annual Conference, Minneapolis, MN, October 2016, Podium

41. Jain, P., **Hood, R.L.**, Bruno, G., Chua, C., Grattoni, A., *Nanochannel Drug Delivery System for Intratumoral Delivery of Immunotherapeutics*. BMES 2016 Annual Conference, Minneapolis, MN, October 2016, Poster
42. Jain, P., Chua, C.Y.X., Bruno, G., **Hood, R.L.**, Grattoni, A., *Miniaturized Nanochannel Delivery System for Intratumoral Immunotherapeutic Release*, NanoX Mini Symposium, Houston, TX, October 2016, Podium
43. Jain, P., Chua, C.Y.X., Ho, J., Bruno, G., Gilbert, A., **Hood, R.L.**, Grattoni, A., *Nanochannel Delivery System for Intratumoral Release of Immunotherapeutics*, NanoX Mini Symposium. Houston, TX, USA. Oct 2016. Poster
44. Filgueira, C.S., Nicolov, E., **Hood, R.L.**, Ballerini A., Garcia-Huidobro, J., Lin, J.Z., Fraga, D., Sabek, O.M., Gaber, A.O., Phillips, K.J., Grattoni, A., *Sustained Delivery of GC-1 from a Nanochannel Device for Metabolic Syndrome*, NanoEngineering for Medicine and Biology, Houston, TX, February 2016, Podium
45. Nicolov, E., Filgueira, C.S., Ballerini, A., **Hood, R.L.**, Bruno, G., Jain, P., Grattoni, A., *Local and Sustained Delivery of Tamoxifen for the Prevention of ER+ Breast Cancer Using a Nanochannel Delivery Platform*, NanoEngineering for Medicine and Biology, Houston, TX, February 2016, Poster
46. Bruno, G., Geninatti, T., **Hood, R.L.**, Scorrano, G., Demarchi, D., Grattoni, A., *Tunable Control of Therapeutics Release through Electric Field Modulated Transport in Nanochannels*, NanoEngineering for Medicine and Biology, Poster, Houston, TX, February 2016, Poster Competition Finalist
47. Jain, P., **Hood, R.L.**, Grattoni, A., *Nanochannel membranes for sustained HIV Prophylaxis*, NanoEngineering for Medicine and Biology, Houston, TX, February 2016, Poster
48. **Hood, R.L.**, Bruno, G., Jain, P., Grattoni, A., *Expanded Control of Ionic Diffusion Through Enhanced Nanoscale Confinement*, NanoEngineering for Medicine and Biology, Poster, Houston, TX, February 2016, Poster Competition Finalist, 2nd Prize
49. **Hood, R.L.**, Bruno, G., Jain, P., Grattoni, A., *Nanochannel Platform for Minimally-Invasive Implantation and Intratumoral Delivery*, BMES 2015 Annual Conference, Tampa, FL, October 2015, Poster
50. Bruno, G., **Hood, R.L.**, Grattoni, A., *Drug delivery in nanochannels: how scaling the nanochannels height generates different transport phenomena*, BMES 2015 Annual Conference, Tampa, FL, October 2015, Podium
51. **Hood, R.L.**, Ferrati, S., Grattoni, A., *Fabrication and Evaluation of a Miniaturized Nanochannel Drug Delivery System*, BMES 2014 Annual Conference, San Antonio, TX, October 2014, Poster

52. Andriani, R.T. Jr., **Hood, R.L.**, Rossmeisl, J.H. Jr., Rylander C.G., *Arborizing Catheter for Fiberoptic Tools in the Brain*, ASLMS 2014 Annual Conference, April 2014, Podium
53. Andriani, R.T., Jr., **Hood, R.L.**, Rossmeisl, J.H., Jr., Rylander, C.G., *A Novel Arborizing Fiberoptic Microneedle Device (FMD) Cather for CED in the Brain*, BMES 2013 Annual Conference, Seattle, WA, September 2013, Poster
54. **Hood, R.L.**, Andriani, R.T. Jr., Robertson, J.L., Rossmeisl, J.H. Jr., Rylander, C.G., "Augmenting Convection-Enhanced Delivery of Malignant Glioma through Simultaneous Co-Delivery of Fluid Agents and Laser Energy with a Fiberoptic Microneedle Device," SBES Symposium, May 2013, Podium
55. **Hood, R.L.**, Andriani, R.T. Jr., Robertson, J.L., Rossmeisl, J.H. Jr., Rylander, C.G., "Developing the Fiberoptic Microneedle Device as an improved catheter for convection-enhanced delivery through simultaneous co-delivery of laser energy during infusion," Torgersen Award Competition, April 2013, Podium
56. **Hood, R.L.**, Andriani, R.T. Jr., Robertson, J.L., Rossmeisl, J.H. Jr., Rylander, C.G., "Determining Photothermal Damage Thresholds in Cerebral Tissue of Laser Energy Delivered Through the Fiberoptic Microneedle Device," ASLMS 2013 Annual Conference, Boston, MA, April 2013, Podium
57. **Hood, R.L.**, Ecker, T.E., Andriani, R.T. Jr., Robertson, J.L., Rossmeisl, J.H. Jr., Rylander, C.G., "Augmenting convection-enhanced delivery through simultaneous co-delivery of fluids and laser energy with a fiberoptic microneedle device," SPIE BIOS Expo 2013, San Francisco, CA, February 2013, Podium
58. **Hood, R.L.**, Andriani, R.T. Jr., Chen, Y., Rossmeisl, J.H. Jr., Rylander, C.G., "Fiberoptic Microneedle Device: Simultaneous Co-Delivery of Fluid Agents and Laser Light," BMES 2012 Annual Conference, Atlanta, GA, October 2012, Poster
59. **Hood, R.L.**, Rylander, C., "Improving Convection-Enhanced Delivery for Treatment of Malignant Glioma through Photothermal Augmentation," SBES Symposium, May 2012, Podium
60. Ecker, T.E., **Hood, R.L.**, Rodgers, A., Vlachos, P., Rylander, C.G., "Thermally Augmented Convection Enhanced Drug Delivery Using a Fiberoptic Microneedle Device," ASLMS 2012 Annual Conference, April 2012, Podium
61. **Hood R.L.**, Kosoglu M.A., Parker M., Rylander C.G., *Fluid Characterization of a Novel Hollow-Core Microneedle Design*, Lasers in Surgery and Medicine 2011; 43:912-912, Abstract

62. Kosoglu M.A., **Hood R.L.**, Rylander C.G., *Fiberoptic Microneedles for Microscale Interstitial Delivery of Therapeutic Light*. Lasers in Surgery and Medicine 2011; 43:920-920, Abstract
63. **Hood, R.L.**, Kosoglu, M.A., Rylander, C.G., “Fiberoptic Microneedle Device: Simultaneous Co-Delivery of Fluid Agents and Laser Light,” BMES Annual Fall Conference 2011, Podium
64. **Hood, R.L.**, Kosoglu, M.A., Rylander, C.G., “Hydraulic Resistance of a Novel Hollow-Core Microneedle Design: Applications in the Treatment of Invasive Bladder Cancer,” ASME 2011 Summer Bioengineering Conference, Podium
65. **Hood, R.L.**, Kosoglu, M.A., Rylander, C.G., “Developing a Fiberoptic Microneedle Device to Treat Malignant Neoplasms through Simultaneous Co-Delivery of Fluid Agents and Laser Light,” SBES Symposium 2011, May 2011, Podium
66. **Hood, R.L.**, Kosoglu, M.A., Rylander, C.G., “Increasing Infused Fluid Dispersal Through Simultaneous Co-Delivery of Laser Light,” Metropolitan Biophotonics Symposium , March 2011, Poster
67. Kosoglu, M.A., **Hood, R.L.**, Rylander, C., “Fiberoptic Microneedle Device for Transdermal Light Delivery,” Metropolitan Biophotonics Symposium, March 2011, Poster
68. **Hood, R.L.**, Kosoglu, M.A., Chen, Y., Montgomery, Z., Rylander, C.G., “Hollow-Core Fiberoptic Fiber Flow Characterization and Diffusion Analysis in Dermal Tissue,” BMES Annual Fall Conference 2010, Podium
69. Montgomery, Z., **Hood, R.L.**, Rylander, C.G., “Determination of Diffusion Coefficients in Calcium Alginate Phantoms,” BMES Annual Fall Conference 2010, Poster
70. Kosoglu, M.A., Chen, Y., **Hood, R.L.**, Rylander, C.G., “Laser-induced Lipolysis Using Fiberoptic Microneedles,” BMES Annual Fall Conference 2010, Poster
71. Chen, Y., Kosoglu, M.A., **Hood, R.L.**, Rylander, C.G., “Fiberoptic Microneedle Device for Laser Lipolysis,” BMES Annual Fall Conference 2010, Poster
72. **Hood, R.L.**, Khan, S., Capitano, A., “Designing and Fabricating a Prostate Model in Perma-Gel Ballistics Gelatin.” BMES Annual Fall Conference 2009, Poster

FUNDED AWARDS AND SUPPORT

1. Title: *Fabrication of an Innovative Nanopore Microneedle for Controlled Gene Transfection within 3D Cell Volumes*
 - a. Funding Agency: University of Texas Vice President of Research’s Office
 - b. Type: Research Grant

- c. Goals of the Project: Develop preliminary data for NSF CAREER grant through prototype fabrication of Nanopore Microneedle Device
 - d. Activity Period: 1/15/20 – 7/15/20
 - e. Role: PI
 - f. Funding Awarded: \$15,000
 - g. Routing Credit: 90%
2. Title: ***Review of Airway Management Devices Available to Combat Medics and Relevant Physical and Performance Specifications***
- a. Funding Agency: Subcontract from US Army Institute for Surgical Research
 - b. Type: Research Grant
 - c. Goals of the Project: Characterize supraglottic airway devices currently available to combat medics
 - d. Activity Period: 1/1/20 – 8/31/20
 - e. Role: PI
 - f. Funding Awarded: \$20,068
 - g. Routing Credit: 100%
3. Title: ***Ecosystem Management: Selective Insect Control***
- a. Funding Agency: National Science Foundation National I-CORPS
 - b. Type: Research Grant
 - c. Goals of the Project: To conduct customer discovery regarding a novel system for species selective insect attraction and extermination
 - d. Activity Period: 8/18-1/19
 - e. PI: Hood, G.D.
 - f. Role: Co-PI
 - g. Funding Awarded: \$50,000
 - h. Routing Credit: 40%
4. Title: ***A Biodegradable, 3D-Printed Implantable for Minimally-Invasive Controlled Delivery***
- a. Funding Agency: Office of the Vice President for Research at UTSA – CONNECT Grant Program Award
 - b. Type: Research Grant
 - c. Goals of the Project: To develop an innovative drug delivery system allowing tight control of dosage release rate.
 - d. Activity Period: 9/18-8/19
 - e. Joint PIs: Hood, R.L., Zwiener, A.
 - f. Total Funding: \$125,000
 - g. UTSA Funding Awarded: \$50,000
 - h. Routing Credit: 75%
5. Title: ***An Innovative Approach to Airway Securement in Civilian and Military Emergency Trauma***
- a. Funding Agency: San Antonio Medical Foundation
 - b. Type: Research Grant

- c. Goals of the Project: To develop a novel approach and device system for airway securement.
 - d. Activity Period: 10/1/18-9/30/19
 - e. PI: Hood, R.L.
 - f. Funding Awarded: \$150,000
 - g. Routing Credit: 50%
6. Title: ***Universal Limb Stasis System for Extended Storage ULiSSES for Soft Tissue Preservation Following Traumatic Amputation***
- a. Funding Agency: Department of Defense CDMRP Military Medical Research and Development
 - b. Type: Research Grant
 - c. Goals of the Project: To develop a limb preservation device for maintaining avulsed limbs until reattachment can take place.
 - d. Activity Period: 10/30/18-10/29/20
 - e. PI: Bunegin, L.
 - f. Role: Sub-Award PI
 - g. Total Funding: \$961,764
 - h. UTSA Funding Awarded: \$150,000
 - i. Routing Credit: 100%
7. Title: ***Fabrication of 2nd Generation Intravenous Delivery System***
- a. Funding Agency: UT Health San Antonio Department of Cardiothoracic Surgery
 - b. Type: Research Contract
 - c. Goals of the Project: To develop an intravenous drug delivery system capable of sounding an alarm if patency is lost.
 - d. Activity Period: 3/1/18-12/31/18
 - e. PI: Hood, R.L
 - f. Funding Awarded: \$22,991
 - g. Routing Credit: 100%
8. Title: ***An innovative device for minimally-intrusive detection of breast milk intake***
- a. Funding Agency: National Science Foundation Regional I-CORPS and UTSA Commercialization Office
 - b. Type: Research Grant
 - c. Goals of the Project: To conduct customer discovery regarding a nipple patch capable of accurately measuring breastmilk volume transfer from mother to infant
 - d. Activity Period: 11/6/17-12/31/17
 - e. PI: Hood, R.L
 - f. Funding Awarded:\$3,000
 - g. Routing Credit: 100%
9. Title: ***An Improved Cystoscopic Approach for 3D Imaging of Intrabladder Cancers***
- a. Funding Agency: Office of the Vice President for Research at UTSA – GREAT Seed Grant Program Award

- b. Type: Research Grant
 - c. Goals of the Project: To develop an improved imaging system incorporating existing cystoscope technologies.
 - d. Activity Period: 9/17-8/18
 - e. PI: Hood, R.L.
 - f. Funding Awarded: \$20,000
 - g. Routing Credit: 100%
10. Title: ***Designing an Improved Suction Device***
- a. Funding Agency: UT Health San Antonio Department of Emergency Medicine
 - b. Type: Research Contract
 - c. Goals of the Project: To design and fabricate an improved suction system for airway management.
 - d. Activity Period: 12/1/17-6/30/18
 - e. PI: Hood, R.L.
 - f. Funding Awarded: \$25,000
 - g. Routing Credit: 100%
11. Title: ***Multistage polymer therapeutic delivery system***
- a. Funding Agency: UTSA Office of Commercialization and Innovation/NSF I-Corps – TechPOP Award
 - b. Type: Research Grant
 - c. Goals of the Project: To conduct customer discovery on a biodegradable polymer platform for controlled drug delivery.
 - d. Activity Period: 6/17-8/17
 - e. PI: Hood, R.L.
 - f. Funding Awarded: \$5,000
 - g. Routing Credit: 100%

INTELLECTUAL PROPERTY FILINGS

1. Feng, Y., De Lorenzo, R., **Hood, R.L.**, Berard, D., Trevino, I., Restrepo, D., *Endotracheal Tube*, Provisional Patent: 62/916,011,2020
2. Bunegin, L., Portillo, D., **Hood, R.L.**, Pineda, G., Kaur, S., Rivas, R., *An oxygen-drive tissue preservation device*, Disclosure: 2020-033, 2020
3. **Hood, R.L.**, Ranjbar, S., Falcon, N.O., Ye, J., Feng, Y., Vu, B.H., *Innovative Computer Vision Approach to 3D Bladder Model Reconstruction from Flexible Cystoscopy*, Provisional Patent: 62/969,044, 2020
4. Portillo, D., Bunegin, L., **Hood, R.L.**, Fallon, Z., Combs, C., *A no-moving-parts fluidic oscillator that delivers single pulses at a tunable frequency*, Disclosure ID: 2020-019, 2019
5. Portillo, D., Bunegin, L., **Hood, R.L.**, Fallon, Z., Combs, C., *Fluidic Oscillator with Single-pulse Outlet Flow*, Disclosure ID: 2020-018, 2019

6. Portillo, D., Combs, C., **Hood, R.L.**, *No-moving-parts fluidic oscillator with tunable oscillation frequency*, Disclosure ID: 2020-013, 2019
7. Finol, E., **Hood, R.L.**, Akhter, F., Vosteguin, B., Patnaik, S., Senolpiskin, A., *An endovascular device for drug delivery to large blood vessels*, Disclosure ID: 2020-012, 2019
8. Akhter, F., **Hood, R.L.**, *An innovative method of coupling fluid agents and laser light into a light-guiding capillary*, Disclosure ID: 2020-004, 2019
9. De Lorenzo, R., **Hood, R.L.**, Campbell, D., Carroll, C., Tomas, B., Garcia, E., Sudeep, J., *Improvements in canister and housing design for a portable emergency medical suction device*, Disclosure ID: 2020-001, 2019
10. Feng, Y., De Lorenzo, R., **Hood, R.L.**, Berard, D., Trevino, I., Restrepo, D., *Endotracheal Tube*, Provisional Patent 62/916,011, 2019
11. De Lorenzo, R., Adams, B., Akhter, F., **Hood, R.L.**, Feng, Y., Schoppe, A., Navarro, O., *Methods, Apparatuses, and Systems for Aspirating Airways*, PCT Application: PCT/US2019/057008, 2019
12. **Hood, R.L.**, Akhter, F., Chang, L., *Microneedle Array Electroporation System for Cell Transfection*, Provisional Patent: 62/890,030, 2019
13. DeArmond, D., Portillo, D., **Hood, R.L.**, Calhoun, J., Vu, B., *Intravenous Patency Detection and Alert System*, Disclosure ID: 2019-045, 2019
14. Jain, P., Gale, J., Schoppe, A., **Hood, R.L.**, *Multistage polymer therapeutic delivery system*, Disclosure ID: 2019-034, 2019
15. Guzman, I., Effiom, J., Franklin, P., Rios., E., **Hood, R.L.**, *Implantable drug reservoir for controlled drug release into the human body*, Disclosure ID: 2019-033, 2019
16. Feng, Y., De Lorenzo, R.A., **Hood, R.L.**, Berard, D., *An Innovative Endotracheal Tube for Improved Securement and Placement Confirmation*, Disclosure ID: 2019-030, 2019
17. Ranjbar, S., **Hood, R.L.**, Vu, B., Feng, Y., Ye, J., *3D Image Reconstruction Of The Bladder From Videos Obtained By Flexible Cystoscopy*, Provisional Patent: 62/799,984, 2019
18. Sharzehee, A., **Hood, R.L.**, Bartels, K., *A novel helical stent to reduce the risk of stent mechanical failure and in-stent restenosis*, Disclosure ID: 2019-022, 2019
19. Hood, G.D., **Hood, R.L.**, *Chemically embedded ring for self defense*, Disclosure ID: 2019-020, 2019

20. **Hood, R.L.**, Ranjbar, S., Falcon, N., *3D image reconstruction of the bladder from videos obtained by flexible cystoscopy*, Disclosure ID: 2019-016, 2018
21. Leach, R., Ringrose, R., Hood, G., **Hood, R.L.**, *Selectively Tunable Attraction Device*, US Utility Patent, UTSJ.P0092US/1001049207, 2018
22. Guda, T., Hood, G., Akhter, F., **Hood, R.L.**, Pearson, J., *Multistage Polymer Therapeutic Delivery System*, US Utility Patent, 16/211,214, 2018
23. De Lorenzo, R., Adams, B., Akhter, F., **Hood, R.L.**, Feng, Y., Schoppe, A., Navarro, O., *Methods, Apparatuses, and Systems for Aspirating Airways*, Provisional Patent: 67/747,520, 2018
24. Farina, M., **Hood, R.L.**, Grattoni, A., *Method and Apparatus for the fail-safe termination of in vivo drug delivery from an implantable drug delivery system*, US Utility Patent, US 15769401, 2018
25. Abbott, C., Aguilera, I., Alapag, A., Durham, B., Haraway, M., **Hood, R.L.**, Palos, Victor, Rathbone, C., *Device for independent, constant delivery to individual wells within a 6-well plate*, Disclosure ID: 2018-061
26. Nawn, C., Abbott, C., Campbell, C., Afanador, A., Wahrmund, C., Robinson, S., **Hood, R.L.**, *Digital Extenders With Haptic Feedback*, International PCT Application, PCT/US2018/055779, 2018
27. Ranjbar, S., **Hood, R.L.**, Vu, B., Feng, Y., Ye, J., *3D image reconstruction of the bladder from videos obtained by flexible cystoscopy*, Disclosure ID: 2018-038, 2018
28. De Lorenzo, R., Adams, B., Akhter, F., **Hood, R.L.**, Feng, Y., Schoppe, A., Navarro, O., *Compact and portable medical suction device with modified structure and new features*, Disclosure ID: 2018-027, 2018
29. De Lorenzo, R., Adams, B., Akhter, F., **Hood, R.L.**, Schoppe, A., Feng, Y., Navarro, O., *Improvements in the handpiece design for a novel emergency medical suction device*, Disclosure ID: 2018-026, 2018
30. Chang, L., **Hood, R.L.**, Akhter, F., *Microneedle array electroporation system for cell transfection*, Disclosure ID: 2018-025, 2018
31. Nawn, C., Fallon, Z., Sparkman, M., **Hood, R.L.**, *Shoulder Dislocation Therapeutic Sleeve*, Disclosure ID: 2018-008, 2018
32. Guda, T., Akhter, F., Pearson, J., Hood, G.D., **Hood, R.L.**, *Multistage polymer therapeutic delivery system*, Provisional Patent: 62/595,063, 2017

33. Hood, G., Ringrose, R., Leach, R., **Hood, R.L.**, *Selectively Tunable Insect Population Control Device*, Provisional Patent: 62/582,935, 2017
34. Nawn, C., Abbott, C., Campbell, C., Robinson, S., Wahrmund, C., Afanador, A., **Hood, R.L.**, *Digital Extenders with Haptic Feedback*, Provisional Patent: 62/571,911, 2017
35. Nawn, C., Abbott, C., Campbell, C., Robinson, S., Wahrmund, C., Afanador, A., **Hood, R.L.**, *Digital Extenders with Haptic Feedback*, Disclosure ID: 2017-048, 2017
36. Hood, G., Ringrose, R., Leach, R., **Hood, R.L.**, *Selectively Tunable Insect Population Control Device*, Disclosure ID: 2017-047, 2017
37. Jafari, A., Guo, R., Habibi, N., **Hood, R.L.**, *A mechanism for active switching of drug release from an implantable drug reservoir*, Disclosure ID: 2017-027, 2017
38. Guda, T., **Hood, R.L.**, Hood, G., Pearson, J., Akhter, F., *Multistage polymer therapeutic delivery system*, Disclosure ID: 2017-025
39. **Hood, R.L.**, Ahn, E., *Fiberoptic Nanoneedle Array (FNA) for Drug Delivery*, Disclosure ID: 2017-006, 2016
40. **Hood, R.L.**, Rathbone, C., *Improved wound dressing incorporating active distribution of regenerative factors*, Disclosure ID: 2017-007, 2016
41. **Hood, R.L.**, Grattoni, A., *Treatment of Prophylaxis of HIV by Sustained Constant Delivery of TAF and FTC from a Multi-Reservoir Delivery Device*, Disclosure ID: OTT201608, 2016
42. Farina, M., **Hood, R.L.**, Grattoni, A., *Method and Apparatus for Fail-Safe Termination of In Vivo Drug Delivery from an Implantable Drug Delivery System*, Priority Data: 62/243,265, PCT Application No: PCT/US2016/057628, 2016
43. Rylander, C., Kosoglu, M., **Hood, R.L.**, Robertson, J.L., Rossmeisl, J., Grant, D., Rylander M., *Fiber Array for Optical Imaging and Therapeutics*, PCT Application No.: PCT/U2012/02968, Filed 2012, **Claims Issued March 2019**, No: 12781846.6
44. Andriani, R.T., Rylander, C., **Hood, R.L.**, *Enhanced Design of Fiberoptic Microneedle Device (FMD)*, Filed 2012, added to PCT/U2012/02968 package
45. Vogt, W.C., **Hood, R.L.**, Robertson, J.L., Rylander, C., *Wearable Epipen for Rapid Response Epinephrine Delivery*, Filed 2012
46. Rylander C., **Hood, R.L.**, *Device for Simultaneous Coupling of Fluids and Light into a Single Hollow-Core Fiberoptic*, Disclosed September 2011, added to PCT/U2012/02968 package

47. Rylander, C., **Hood, R.L.**, Robertson, J.L., Rylander, M.N., *Fiberoptic Microneedle Device for Convection-Enhanced Thermochemotherapy of Malignant Glioma*, Disclosure filed March 2011, added to PCT/U2012/02968 package

TEACHING ACTIVITIES

The University of Texas at San Antonio Department of Mechanical Engineering

San Antonio, TX

- Instructor: *ME 2173 Numerical Methods*- Spring 2020
 - Course Evaluation:
 - Instructor Evaluation:
- Instructor: *ME 2173 Numerical Methods*- Fall 2019
 - Course Evaluation: 4.54/5
 - Instructor Evaluation: 4.72/5
- Instructor: *ME 2173 Numerical Methods*- Spring 2019
 - Course Evaluation: 4.29/5
 - Instructor Evaluation: 4.46/5
- Instructor: *ME 5733/BME 6093.02 Advanced Medical Device Design and Commercialization*- Fall 2018
 - Course Evaluation: 5.0/5
 - Instructor Evaluation: 5.0/5
- Instructor: *ME 2173 Numerical Methods*- Fall 2018
 - Course Evaluation: 4.50/5
 - Instructor Evaluation: 4.70/5
- Instructor: *ME 2173 Numerical Methods*- Spring 2018
 - Course Evaluation: 4.33/5
 - Instructor Evaluation: 4.55/5
- Instructor: *ME 5733 Advanced Medical Device Design*- Fall 2017
 - Course Evaluation: 4.33/5
 - Instructor Evaluation: 4.22/5
- Instructor: *ME 2173 Numerical Methods*- Spring 2017
 - Course Evaluation: 4.65/5
 - Instructor Evaluation: 4.61/5
- Instructor: *ME 2173 Numerical Methods*- Fall 2016
 - Course Evaluation: 4.07/5
 - Instructor Evaluation: 4.2/5

Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences

Blacksburg, VA

- Teaching Assistant: *BMES 5014 Quantitative Physiology*: Spring 2011

GRADUATE STUDENT ADVISING

- 08/16 - **Forhad Akhter**, Ph.D., Mechanical Engineering, expected May 2020, Project Titles: “Fiberoptic Microneedle Device;” “Combat Ready Suction Device;” Support by UTSA Mechanical Engineering Graduate Teaching Assistantship, Startup, and UT Health SA Contract
- 01/18 - **Daniel Portillo**, Ph.D., Mechanical Engineering, expected December 2022, Project Title: “Universal Limb Stasis System for Extended Storage (ULiSSES) for Soft Tissue Preservation Following Traumatic Amputation.” Support by UTSA Mechanical Engineering Teaching Assistantship and Department of Defense CDMRP Military Medical Research and Development
- 08/17 – 12/19 **Priya Jain**, M.S., Biomedical Engineering, graduated December 2019, Support by Presidential Distinguished Research Fellowship, Startup, and VPR CONNECT Grant, Project: “Multistage Polymer Delivery System”
- 10/18 – 5/19 **Isaac Trevino**, M.S., Electrical Engineering, expected December 2019, Project Title: “An Innovative Approach to Airway Securement in Civilian and Military Emergency Trauma.” Support by San Antonio Medical Foundation Grant. Transferred to Artyom Grigoryan’s lab to pursue project more in-line with long-term career goals
- 05/18 – 5/20 **David Berard**, M.S., Mechanical Engineering, defended April 2020, Project Title: “An Innovative Approach to Airway Securement in Civilian and Military Emergency Trauma.” Support by Startup and San Antonio Medical Foundation Grant, Co-Advised with David Restrepo
- 12/18 – 10/19 **Darnell Campbell**, M.S., Biomedical Engineering, expected December 2020, Project Title: “An Innovative Approach to Airway Securement in Civilian and Military Emergency Trauma.” Support by UT Health SA sub-award on San Antonio Medical Foundation Grant. Co-Advised with Robert De Lorenzo, Transferred
- 11/17 – 08/18 **Sorush Ranjbar**, M.S., Electrical Engineering, May 2019, Project Title: “An Improved Cystoscopic Approach for 3D Imaging of Intrabladder Cancers.” Support by VPR GREAT Grant and UTSA AIS Teaching Assistant. Transferred to Chunjiang Qian’s lab to pursue project more in-line with long-term career goals
- 11/16 – 5/19 **Corinne Nawn**, Ph.D., Biomedical Engineering, May 2019, Dissertation Title: *Augmenting airway management by evaluating tracheal detection mechanisms and comparing the forces and angles required for endotracheal intubation with direct laryngoscopy versus a novel airway management device.* Support by US Army Institute for Surgical

Research, Research Supported by US Army Institute for Surgical Research and AMEDD Advanced Medical Technology Initiative. Co-Advised with Jing Yong Ye and Robert De Lorenzo

- 8/19 - **Grant Copeland**, MS, Mechanical Engineering, expected August 2020, Project: “Intravenous Patency Detection and Alert System,” Support by DHA 6.7 Contract
- 01/20 - **Anita Igberaese**, Ph.D., Electrical and Computer Engineering, expected May 2022, Project Title: “An Improved Cystoscopic Approach for 3D Imaging of Intrabladder Cancers,” Co-Advised with Dr. Yufang Jin
- 3/19 – 5/20 **Santiago Manrique**, Ph.D., Mechanical Engineering, defended April 2020, co-advised with Drs. Yusheng Feng and Kathryn Mayer, Dissertation Title: “Computational Modeling of Pancreatic Cancer: Fluid Flow and Plasmonic Photothermal Therapy”
- 10/19 - **James White**, MS, Mechanical Engineering, expected August 2020, Project: “An Innovative Approach to Airway Securement in Civilian and Military Emergency Trauma,” Co-Advised with David Restrepo
- 01/20 - **Saketh Ram Peri**, Ph.D. Biomedical Engineering, expected May 2024, Support by Startup and San Antonio Medical Foundation Grant, Co-Advised with Robert De Lorenzo

GRADUATE COMMITTEE SERVICE

- **Chinonso Ovuegbe**, M.S., UTSA Mechanical Engineering, May 2020, Co-Advisors: Adel Alaeddini and Pranav Bhounsule
- **Joseph Pearson**, Ph.D., UTSA Biomedical Engineering, May 2019, Advisor: Teja Guda
- **Robert Brothers**, M.S., UTSA Mechanical Engineering, December 2018, Advisor: Pranav Bhounsule
- **Eric Sanchez**, M.S., UTSA Mechanical Engineering, December 2018, Advisor: Pranav Bhounsule
- **Christian Wahrmund**, M.S., UTSA Mechanical Engineering, May 2018, Advisor: Amir Jafari
- **Chad Oian**, M.S., UTSA Mechanical Engineering, July 2018, Advisor: Yusheng Feng
- **Cyanea Van Trieu-Do**, M.S., UTSA Mechanical Engineering, December 2017, Advisor: Yusheng Feng
- **Analisa Roland**, M.S., UTSA Mechanical Engineering, December 2017, Advisor: Amir Jafari
- **Gautham Muthukumaran**, M.S., UTSA Mechanical Engineering, July 2017, Advisor: Amir Jafari

- **Giacomo Bruno, Ph.D.**, Politecnico di Torino Electrical Engineering, June 2017, Advisors: Danilo Demarchi, Alessandro Grattoni

COMMITTEE SERVICE

Mechanical Engineering Additive Manufacturing Hiring Committee- Duties: assessed candidate packages, tele-interviewed candidates, hosted/interviewed candidates in person, selected best candidates for offers, Fall 2019 - Current

Mechanical Engineering Graduate Recruitment Committee- Duties: attended meetings, brainstormed ideas to increase graduate recruitment, and represented department at events and conferences, Spring 2019 - Current

Mechanical Engineering Competitive Scholarship Committee- Duties: attended meetings, updated the inclusion criteria, bylaws, and scholarship posting; Fall 2016 – Summer 2018

Mechanical Engineering Seminar Planning Committee- Duties: attended meetings, reviewed and selected nominated speakers, coordinated itineraries, hosted speaker visits, introduced speaker seminars, and hosted speakers at dinner; Fall 2016 – Current

College of Engineering College Administrative Committee- Duties: attended meetings, reviewed prospective changes to Handbook of Operating Procedures, collected feedback from department faculty, submitted suggested revisions or new actions to committee chair; Fall 2017 – Current

College of Engineering Business Service Center Faculty Committee- Duties: attended meetings, discussed changes to BSC operating policies on student appointments, student travel, and purchase orders; Fall 2018 – Current

UTSA Honors Advisory Board- Duties: attended meetings, discussed action plans for revamping Honors Credit tracking, made recommendations concerning transition to experiential learning model; Fall 2016 – Summer 2018

UTSA Honors Curriculum Committee- Duties: attended meetings, drafted revisions to Honors Curriculum; Fall 2016 – Fall 2017

UTSA Honors Vision and Mission Committee- Duties: attended meetings, drafted new vision and mission statements, helped organize town hall to get Honors student input on vision and mission statements; Fall 2016 – Fall 2017

SCHOLARLY PEER REVIEW

- Journal of Medical Devices, reviewed 25 articles since 2014
- Lasers in Surgery and Medicine, reviewed 8 articles since 2011
- Annals of Biomedical Engineering, reviewed 7 articles since 2018
- PLOS One, reviewed 6 articles since 2018
- Biomedical Microdevices, reviewed 1 article in 2016

- Journal of Neuroscience Methods, reviewed 1 article in 2013
- Lasers in Medical Science, reviewed 1 article in 2013
- Trends in Biotechnology, reviewed 1 article in 2019
- World Congress of Biomechanics, reviewed abstracts in 2018
- Annual Biomedical Engineering Society Conference, reviewed abstracts every year since 2016
- Summer Biomechanics, Bioengineering, and Biotransport Conference, reviewed abstracts every year since 2016

CHAired SESSIONS

Chair for *Biotransport Thermal Therapy and Cryopreservation* session at Summer Biomechanics, Bioengineering, and Biotransport Conference, June 28th, 2019

Co-Chair PhD Podium Competition Session Biomechanics at the Cell, Tissue and Multiscale Level at the World Congress of Biomechanics, July 10th, 2018

Co-Chair for *Hyperthermia and Heat-Mediated Transport* track at the World Congress of Biomechanics, July 8th, 2018

Co-Chair for *Heart Valve Mechanics* session at Summer Biomechanics, Bioengineering, and Biotransport Conference, June 21st, 2017

Co-Chair for *Nano to Micro Devices in Delivery I* session at Annual Biomedical Engineering Society Conference October 14th, 2017

JOURNAL EDITING

- Guest Editor for Journal of Medical Devices Special Issue on Socioeconomically Disadvantaged Populations, published March 2020

MEDIA ATTENTION

- UTSA COE Faculty Spotlight by Julie Paulson, “Faculty Spotlight – Lyle Hood,” December 6, 2019, <http://engineering.utsa.edu/faculty-spotlight-lyle-hood/>
- Texas Public Radio program *All Things Considered* by Bonnie Petrie, “Organ Chamber From UTSA To Help Preserve Soldiers' Lost Limbs,” August 2, 2019 <https://www.tpr.org/post/organ-chamber-utsa-help-preserve-soldiers-lost-limbs>
- UTSA Today by Elda Barajas and KC Gonzalez, “UTSA students display innovative ideas at the Undergraduate Research and Creative Inquiry Showcase,” April 22, 2019 <https://www.utsa.edu/today/2019/04/story/ResearchShowcase.html>
- PBS New York SciTech NOW by Hari Sreenivasan, “3D printing helps fight cancer,” March 29, 2019. <https://app.criticalmention.com/app/#clip/view/fe3def8d-ff70-4b30-a7bf-6a623d9b0788?token=9dc768cf-a065-484e-a9d5-c7f489b76b00>

- KLRN SciTech NOW by Chris Duel, “3D printing helps fight cancer,” November 8, 2018
- Alliance of Advanced BioMedical Engineering (powered by ASME) by Dan Ferber, “3D-Printed Implant Could Help Cancer Patients Get Right Amount of Drug,” November, 2018
- 3D Printing Progress by Billy Calzada, “3D printed implant for drug delivery,” October 2018
- San Antonio Express-News by S.M. Chavey, “UTSA team tapping 3D printing tech in fight against cancer,” September 2018
- 3D Printing Industry by Brian Lord, “SwRI and UTSA to develop 3D printed medical implant for slow-release cancer medication,” September 2018
- www.3ders.org, “SwRI, UTSA researchers develop 3D printed biodegradable implant for cancer treatment,” September 2018
- Verdict Medical Devices, “Researchers develop 3D medicinal implant,” August 2018
- Southwest Research Institute Press Release by Joanna Carver, “SwRI, UTSA researchers design minimally invasive medicinal implant,” August 2018
- UTSA Press Release, “Researchers at UTSA and SwRI design biodegradable device to treat illness, August 2018
- Texas Public Radio by Bonnie Petrie, “San Antonio Researchers Developing 3D Implants For Cancer Treatment,” August 2018
- EurekAlert!, “Discovery will impact design of drug delivery systems at the molecular level,” May 2018
- Nanowerk.com, “Discovery will impact design of drug delivery systems at the molecular level,” May 2018
- Drug Discovery and Development Mag, “Discovery Will Impact Design of Drug Delivery Systems at the Molecular Level,” May 2018
- Phys.org, “Discovery will impact design of drug delivery systems at the molecular level,” May 2018
- Science Daily, “Discovery will impact design of drug delivery systems at the molecular level,” May 2018
- SciCasts, “Discovery will Impact Design of Drug Delivery Systems at the Molecular Level,” May 2018
- Science Newline: Medicine, “Discovery Will Impact Design of Drug Delivery Systems at the Molecular Level,” May 2018
- Nanowerk.com, “Molecules' movements through membrane present new puzzle,” May 2018
- News-Medical.net, “Researchers develop new technology that will impact design of drug delivery systems,” May 2018
- Health Medicine Network, “Discovery Will Impact Design of Drug Delivery Systems at the Molecular Level,” May 2018
- Italian Edition of Scientific American “Politecnico di Torino: Ai confini del piccolo: l'ultra-nanoscala, dove la fisica classica e fisica quantistica si incontrano,” May 2018
- UTSA Today feature by Joanna Carver: “Q&A: Lyle Hood, UTSA Department of Mechanical Engineering,” March 2018

- Spring 2017 Issue of Innovations by Joanna Carver: “Engineering Professor Creates New Laser Needle,” April 2017
- *Here and Now* on WBUR Boston NPR by Wendy Rigby: “A New Tool For Drug Delivery From Scientists In Texas,” January 2017
- Channel 4 News Interview by Zach Hendrick: “Local professors developing minimally invasive cancer treatment device,” January 2017
- San Antonio Local Fox News Interview by Joanna Carver: “New minimally invasive capsule could change cancer treatment,” January 2017
- Technology.org feature: “Study describes new minimally invasive device to treat cancer and other illnesses,” December 2016
- Contagion Live article by Kristi Rosa: “New Implantable Device Can Revolutionize Treatment of HIV, Cancer, and Other Diseases,” December 2016
- Med Device Online article by Suzanne Hodsden: “Implantable Drug-Delivery Device Could Treat Cancer, HIV, or Chronic Disease,” December 2016
- EurekAlert article: “UTSA study describes new minimally invasive device to treat cancer and other illnesses,” December 2016
- SciFeeds Post: “New device could revolutionize drug delivery to treat cancer and other diseases, study shows,” December 2016
- InfoWebbie Rockin’ Science article: “New Minimally Invasive Device to Treat Cancer and Other Illnesses,” December 2016
- Innovations Report article by Joanna Carver: “UTSA study describes new minimally invasive device to treat cancer and other illnesses,” December 2016
- Science Daily article: “New minimally invasive device to treat cancer and other illnesses,” December 2016
- The Engineer article: “Implantable drug delivery device fights cancer while maintaining patients’ health,” December 2016
- UTSA Today feature by Joanna Carver: “UTSA study describes new minimally invasive device to treat cancer and other illnesses,” December 2016
- The Indian Express feature: “Scientists develop new device to treat cancer and other ailments,” December 2016
- New Kerala feature: “Scientists develop new device to treat cancer and other ailments,” December 2016
- Nanotechnology Now feature: “UTSA study describes new minimally invasive device to treat cancer and other illnesses: Medicine diffusion capsule could locally treat multiple ailments and diseases over several weeks,” December 2016
- LCA Houston International Society News: “AIDS Foundation Houston Announces World AIDS Day Luncheon Honoree,” October 2016
- Fierce Pharma: “Houston Methodist researchers get \$4M grant to study HIV drug delivery device,” July 2016
- Work featured on Reuters Health by Rob Goodier: “A refillable implant delivers steady stream of HIV prophylactics,” March 2016
- Consultant 360: “A refillable implant delivers steady stream of HIV prophylactics,” February 2016
- Work featured on IEEE Spectrum by Mia Lobel: “The New Medicine – Fiberoptic Microneedles,” July 2012

