

Resume of Franklin D. Shaffer

OVERVIEW

My primary area of technical expertise is the visualization and measurement of fluid dynamics and aerodynamics.

I also have extensive experience in policy analysis and project management.

SELECTED PEER REVIEWED JOURNAL PUBLICATIONS

Below are selected publications that showcase my talents, my experience, and the leading scientists and engineers I've worked with.

Publication with the Director of the US Geological Survey and now President of the National Academy of Sciences, Dr. Marcia McNutt

Review of the flow rate estimates of the Deepwater Horizon oil spill

Marcia K. McNutt¹, Rich Camilli², Timothy J. Crone³, George D. Guthrie⁴, Paul A. Hsieh⁵, Thomas B. Ryerson⁶, Ömer Savaş⁷, and Frank Shaffer⁴, Proceedings of the National Academy of Sciences, Volume 109, Number 50, December 20, 2011

1. Office of the Director, US Geological Survey
2. Department of Applied Ocean Physics and Engineering, Woods Hole Oceanographic Institution
3. Lamont–Doherty Earth Observatory, Columbia University
4. National Energy Technology Laboratory, US Department of Energy
5. US Geological Survey
6. Chemical Sciences Division, National Oceanic and Atmospheric Administration Earth System Research Laboratory
7. Department of Mechanical Engineering, University of California at Berkeley

I wrote this paper with Dr. McNutt and USGS Scientist Dr. Paul A. Hsieh (see Author Contributions on page 1 of the paper). The website of the National Academy of Sciences reports that our paper has been viewed more than 26,000 times. Our paper has been cited 400 times in papers published in peer reviewed scientific journals.

Our paper was the primary evidence used by the Honorable Judge Carl J. Barbier, US District Court for Eastern Louisiana, to send \$20.8 billion to the people of five US Gulf states to recover and rebuild from the damages done by the Deepwater Horizon oil leak. It was the largest single fine of a single entity in US history.

January 12, 2024

Publications with Rocket Engineer Kenneth Clark Butler and on the Development of his Nimbus Microturbine Heart Pump

Ken was on the team at Aerojet Rocketdyne who developed the main engine for the Saturn V rocket that sent the first three Apollo astronauts to the moon.

He later invented the world's first micro-turbine heart pump.

Development of an Axial Blood Flow Pump Left Ventricular Assist Device

K. C. Butler¹ , T. R. Maher¹ , H. S. Borovetz² , R. L. Kormos² , J. F. Antaki² , M. Kameneva² , B. P. Griffith² , T. Zerbe² , and F.D. Shaffer³ , Journal of the American Society of Artificial Internal Organs, Vol. 38, No.3, M296 – M300, July 1992

1. Nimbus, Incorporated, Rancho Cordova, California
2. Artificial Heart and Lung Program, University of Pittsburgh, Pittsburgh, Pennsylvania
3. United States Department of Energy, Pittsburgh, Pennsylvania

Fluorescent Image Tracking Velocimetry of the Nimbus Axipump

J. Kerrigan¹ , F. Shaffer² , T.R. Maher³ , T.R. Dennis³ , J. Tammy³ , H.S. Borovetz¹ , and J.F. Antaki¹ , Journal of the American Society of Artificial Internal Organs, ASAIIO Journal Volume 39, Number 3, pages M639-M643, July 1993.

1. Artificial Heart and Lung Program, University of Pittsburgh, Pittsburgh, Pennsylvania
2. United States Department of Energy, Pittsburgh, Pennsylvania
3. Nimbus, Incorporated, Rancho Cordova, California

Publications with Professor Ömer Savaş, UC Berkeley Department of Mechanical Engineering

On the near-field interfaces of homogeneous and immiscible round turbulent jets

Eric Ibarra, Ömer Savaş, and Frank Shaffer, UC Berkeley Department of Mechanical Engineering. We published our paper in the world's leading journal for fluid mechanics: *The Journal of Fluid Mechanics*.

Determining the discharge rate from a submerged oil leak using video from Remotely Operated Vehicles (ROVs)

Frank Shaffer¹, Ömer Savaş², Kenneth Lee², Giorgio de Vera², Journal of Flow Measurement and Instrumentation, Volume 43, Pages 34-46, June 2015

1. USDOE National Energy Technology Laboratory, United States
2. U.C. Berkeley, Department of Mechanical Engineering, United States

Publications with Lieutenant Colonel Dr. Brack Hattler, MD, PhD.

Dr. Hattler was a battlefield surgeon in Vietnam. He was the Chief of US Army Organ Transplant Service at Walter Reed Army Medical Center. He was a High-Risk Cardiothoracic Heart and Lung Transplant Surgeon at the University of Pittsburgh Presbyterian Hospital. Dr. Hattler invented an artificial lung device.

Below is the original publication describing it.

Respiratory Dialysis: A New Concept in Pulmonary Support

Journal of the American Society of Artificial Organs

Volume. 38, Issue Number 3, 1992

Brack G. Hattler¹, Peter C. Johnson¹, Patricia J. Sawzik³, Franklin D. Shaffer², Miroslav Klain¹, Laura W. Lund¹, Gary D. Reeder⁴, Frank R. Walters¹, Joseph S. Goode³, and Harvey S. Borovetz¹

1. Departments of Surgery and Anesthesia, University of Pittsburgh
2. United States Department of Energy, Pittsburgh Energy Technology Center
3. Walters Scientific Instrument Labs, Pittsburgh, Pennsylvania
4. Electromedics, Inc., Englewood, Colorado.

Publications with Distinguished Professor Dr. Harvey S. Borovetz

Co-founder and first Chair (2003 – 2013) of the Department of Bioengineering and Professor of Chemical and Petroleum Engineering
Swanson School of Engineering, University of Pittsburgh
Robert L. Hardesty Professor, Department of Surgery,
University of Pittsburgh School of Medicine
Deputy Director of Artificial Organs and Medical Devices
McGowan Institute for Regenerative Medicine

This is in addition to my publications with Dr. Borovetz listed above with Dr. Hattler and Ken Butler.

Optimal Management of a Ventricular Assist System, John Woodard, Franklin Shaffer¹, Richard Schuab², Laura Lund², and Harvey Borovetz², Journal of the American Society of Artificial Internal Organs, Vol. 38, No.3, 1992

1. Baxter Healthcare, Novacor Division, Oakland, CA
2. Artificial Heart and Lung Program, University of Pittsburgh, PA
3. United States Department of Energy, Pittsburgh, PA

ABOUT MY WORK WITH THE NATIONAL ENERGY MODELING SYSTEM

I was the first person trusted to run the National Energy Modeling System (NEMS) completely independent of the DOE Energy Information Administration. I used NEMS to forecast the US economy 25 years into the future under varied scenarios for the development of advanced energy technologies, emissions regulations, and climate change. From 1998 to 2007, I generated forecasts for the Department of Energy, the Office of Management and Budget, the National Academy of Sciences National Research Council, and The White House.

POSITIONS IN THE US DEPARTMENT OF ENERGY

Senior Research Engineer, GS-14

Policy Analyst, GS-14

Project Manager GS-13

AWARDS FOR MY WORK

US Geological Survey Director's Award for Exemplary Service to the Nation

R&D 100 Award

Federal Laboratory Consortium Award for Excellence in Technology Transfer

EDUCATION

Bachelor of Science in Mechanical Engineering, West Virginia University, 1984

Master of Science in Mechanical Engineering, West Virginia University, 1986

VOLUNTEER WORK

Co-founder of the NETL Minority Mentoring Program

Project Manager for the NETL Historically Black Colleges and University Program

Co-founder of the Greater Pittsburgh Renaissance Chapter of Blacks in Government

The five hundred and thirty-five (535) federal employees of the DOE Morgantown Energy Technology Center and the DOE Pittsburgh Energy Technology Center chose me to represent them during the merger of the two Centers to form the 15th National Laboratory of the United States, the Federal Energy Technology Center.

It was later renamed the National Energy Technology Laboratory.

January 12, 2024

I am willing to relocate to anywhere in the United States
or to any other high-technology democratic country.

I can be contacted at FDShafter@Gmail.com or 412-320-0510

January 12, 2024

REFERENCES

More references are available

UNIVERSITY OF CALIFORNIA, BERKELEY

BERKELEY • DAVIS • IRVINE • LOS ANGELES • MERCED • RIVERSIDE • SAN DIEGO • SAN FRANCISCO



SANTA BARBARA • SANTA CRUZ

COLLEGE OF ENGINEERING
DEPARTMENT OF MECHANICAL ENGINEERING
6113 Etcheverry Hall
510.642.5705 tel
510.642.5539 fax
savas@berkeley.edu

BERKELEY, CALIFORNIA 94720-1740

April 29, 2019

Re: Franklin Shaffer

Dear Reader:

I am writing this letter at the request of Franklin Shaffer to describe our joint work and the nature of our interactions over the past decade. We met first during the national crisis of the Deep Water Horizon oil spill at the Macondo Basin in the Gulf of Mexico in the Spring of 2010.

We served on the Plume Team of the Flow Rate Technical Group formed by the USGS in May 2010, and headed Bill Lehr of the NOAA. The charge was to estimate the flow discharge rate at well head. The team was comprised of scientists from the government, industry and academia. Frank and I served on this committee, thus we had many hours of direct face to face interaction as well as communication via teleconferences and emails in a national crisis setting.

Eventually, the flow rate was established with reasonable accuracy just before the well was capped. The results has vindicated the position Frank and I took. The final results are presented in a much cited paper in PNAS, The lead author of the paper is then Director of USGS Dr. Marcia McNutt. Of the membership of the Plume Team , only Frank and I were invited to contribute to the as authors.

In the following years, Frank and I carried out experiments in the UC Berkeley tow tank to develop techniques for estimating accidental discharges. These works culminated in a software package which was delivered to DOI/BSEE in 2016. This package which runs with minimal input from the user, estimates the flow are within 20% accuracy from a video stream. We, however, hope that in never gets to be used. We are currently working on large manuscript on the fundamentals of the turbulent discharges.

As one can see, we have had ample opportunity to observe each other under severe stress as well as in typical joint collaborative research setting. Frank has demonstrated his knowledge of fundamental, expertise application, his grit under fire, and personal professional integrity under mob pressure. During the Team deliberations, he held his ground fast which are based on sound principles, refusing to accept the majority view which turned out to be not quite right. During our joint laboratory work and software development, he kept his focus on the completeness and soundness of the work before us.

Franklin has an impeccable integrity, personally and professionally. Anyone interacting with him will be held to those standards.

Yours Sincerely,

Ömer Savaş

Professor of Fluid Mechanics

January 12, 2024

January 12, 2024