

# Gianluca Puliti | PhD

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## Principal Engineer | Project Manager | Aerospace | Medical Devices | Pharma

Accomplished and enthusiastic engineer and project manager with significant industrial and academic experience in fluid and thermal sciences, heat transfer, thermodynamics, computational fluid dynamics, aerodynamics, multi-phase flows, cosmology, and numerical methods. Proactive team player and innovative team leader with an exceptional work ethic. Confident and articulate technical and interpersonal communications skills, and quick learner. Possess entrepreneurial spirit and well developed skills in prioritizing, organization, decision making, and risk/time management.

## Professional Experience

- **Becton, Dickinson and Company** **Vernon Hills, IL**  
May 2016–Present  
*Project Manager | Principal R&D Engineer*
  - Manage the development and implementation of new combination products within the Infection Prevention platform.
  - Lead the design for next generation antiseptic products.
  - Assist current commercial products and line extensions through scientific review, investigation and support according to the established product development process and quality procedures.
  - Drive intellectual property strategy for new products.
  - Partner with the regulatory team to coordinate and prepare IND and NDA submissions.
  - Manage complex pilot and pivotal clinical study schedules and budgets.
  - Facilitate regulatory and clinical strategic plans by means of detailed risk-benefit analysis.
  - Lead the process validation involving over ten new pieces of equipment required for the commercialization of six new SKUs.
  - Established a novel methodology for managing project risks that led to a high-confidence and risk-mitigated project plan.
  - Mentor young scientists, engineer, and direct reports.
- **Piramal Critical Care** **Bethlehem, PA**  
February 2013–May 2016  
*R&D Project Manager*
  - Managed three diverse multi-million dollar projects from product conception to commercialization, for medical devices and pharmaceutical products.
  - Directed a project that received five European approvals to date for a new inhalation anesthetic agent, Desflurane.
  - Led a team of engineers in the design of a new anesthetic gas delivery system with cutting edge technology.
  - Modeled multiphase flow analysis using computational fluid dynamics (CFD) in their laminar and turbulent regimes.
  - Managed cross-functional collaborations, project development, project funding, and process improvement.
  - Collaborated with Regulatory in preparation of devices 510(k), CE marks and ANDA applications.
  - Planned and hosted meetings with international partners in the United States and in Europe.
  - Formulated and pursued timelines and development plans for joint ventures.
  - Negotiated with suppliers to improve reliability and lower costs, while supporting product validation and scale-up.

- **Piramal Critical Care** **Orchard Park, NY**  
*Senior R&D Mechanical Engineer* *May 2012–February 2013*
  - Designed and tested working and non-working prototypes of new and cutting edge medical devices for the delivery of anesthesia, some of which were presented at international conferences.
  - Modeled multiphase flows through vaporizers and other complex flow paths, using state-of-the-art CFD packages such as COMSOL.
  - Analyzed and modeled with finite element methods (FEM) the structural integrity of complex structures undergoing creep, high cycle fatigue, and chemical corrosion.
  - Implemented design inputs through extensive use of CAD packages, such as SolidWorks.
  - Coordinated toxicology and safety studies of engineering materials with national and international laboratories.

## Teaching Experience

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- **Northampton Community College** **Distance Learning**  
*Adjunct Professor of Mathematics* *Starting October 2017*
  - Selected to teach Fundamentals of Mathematics II in the Fall 2017 semester via the NCC Distance Learning program.
- **Northampton Community College** **Bethlehem, PA**  
*Adjunct Professor of Statistics and Physics* *January 2015–May 2016*
  - Provide challenging course work, innovative projects, and stimulating exercises while utilizing novel active learning techniques and a hands-on approach.
  - Promote the use of the latest technology and cultivate greater general education skills such as critical thinking.
  - Earned recognition as a knowledgeable professor with well-organized, stimulating, and student-centered courses.

## Education

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### Academic Qualifications.....

- **University of Notre Dame** **Notre Dame, IN**  
*PhD - Aerospace and Mechanical Engineering, GPA 3.97/4.00* *2006–2012*
- **University of Notre Dame** **Notre Dame, IN**  
*Master of Science - Mechanical Engineering, GPA 3.97/4.00* *2006–2010*
- **Embry-Riddle Aeronautical University** **Daytona Beach, FL**  
*Bachelor of Science – Aerospace Engineering, GPA 3.93/4.00* *2001–2006*  
*Bachelor of Science – Engineering Physics, GPA 3.93/4.00*

### Academic Certifications.....

- **Stanford University** **Stanford, CA**  
*Executive Education in Innovation and Biodesign* *March 2017*
- **Pennsylvania State University** **Center Valley, PA**  
*Project Management Certificate* *Jan-Jun 2015*

### Notable Projects.....

- **Graduate School Research:** *Nanofluids and Their Properties*, University of Notre Dame, August 2006–May 2012
  - Modeled the physics of nanofluids using equilibrium molecular dynamics and computational fluid dynamics.
  - Pioneered complex numerical algorithms to extract thermodynamic, rheological, and transport properties of fluids from raw equilibrium molecular dynamics data.
  - Presented the work on nanofluid at over 15 international conferences, and received various awards for its novelty and

multi-billion-dollars market potential.

- Pursued, under a grant from the United States Department of Energy, the feasibility study of using ionic liquids with a suspension of nanoparticles in an absorption refrigeration cycle and for CO<sub>2</sub> capture.
- **Undergraduate Research Intern.** University of Notre Dame, Summers of 2003 and 2005
  - Designed and implemented an open source educational simulation toolbox using Simulink to allow undergraduates to have a visual understanding of the physics behind an absorption refrigeration thermodynamic cycle.
  - Developed and implemented a model to provide some basic understanding of the dynamics of combustion, through a simplified mathematical representation of the complicated reaction processes.
- **Undergraduate Research and Senior Design Projects.** Embry-Riddle Aeronautical University, Aug 2001–May 2006
  - Led the aerodynamics and aircraft stability team towards the design of the variable-sweep wings for the Quiet Supersonic Jet during a senior design project conducted in partnership with Gulfstream.
  - Headed the design of the thermal control subsystem, and of the electrodynamic and momentum exchange tether of a space vehicle for a mission to Enceladus. This project was entered in the Revolutionary Aerospace System Concept Academic Linkage (RASC-AL) contest, organized by NASA and the National Institute of Aerospace.
  - Designed the wings of a micro air vehicle, and analyzed their aerodynamic stability and control.
  - Derived a perturbative solution for a massive, static, spherically-symmetric scalar field in general relativity, the Einstein-Klein-Gordon equations; presented work at an international APS conference.

## Selected Skills, Awards and Technical Training

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- **Software:** SolidWorks, Pro/ENGINEER, CATIA, NASTRAN, COMSOL, Matlab, Simulink, Mathematica, Code V, SAP, Minitab, C++, HTML, CSS, IDL, MFIX, DL-POLY, OpenMD, LaTeX, FORTRAN, Adobe Creative Cloud, Microsoft Excel, Word, PowerPoint, Access, and Project.
- **Professional Memberships:** American Institute of Aeronautics and Astronautics (AIAA), American Society of Mechanical Engineers (ASME), American Physical Society (APS), Regulatory Affairs Professionals Society (RAPS), Project Management Institute (PMI), Sigma Gamma Tau, Omicron Delta Kappa, Tau Beta Pi
- **Awards**
  - 2012 Computational Science and Visualization Award, Notre Dame, Indiana
  - 2008 AIAA Foundation Graduate Award, Orlando, Florida
  - 2005 Embry-Riddle Outstanding Academic Achievement and Leadership Award
- **Technical Training**
  - ISO 13485:2016 Medical Devices - Quality Management Systems. Training provided by NSF Health Sciences, May 2017
  - cGMP Training – Piramal Critical Care, Inc., 23 July 2014
  - SolidWorks Essentials – Five day intensive training provided by CADimensions, Inc. in June 2012
  - ISO 14971:2012 – Medical devices: risk management. Training provided by the Emergo Group

## Publications and Invited Talks

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- **Journals**
  - Puliti, G., et al. (2018). Transport properties of a gold-water nanofluid using molecular dynamics. Under Review.
  - Puliti, G., et al. (2012). Thermodynamics properties of a gold-water nanofluid using molecular dynamics. *Journal of Nanoparticle Research*, 14(12), 1296
  - Puliti, G., et al. (2011). Thermodynamics properties of gold-water nanolayer mixtures using molecular dynamics. *Journal of Nanoparticle Research*, 13(9), 4277-4293
  - Puliti, G., et al. (2011). Nanofluids and their Properties. *Appl. Mech. Rev.*, 65(2):021001

- **Books**

- Puliti, G. and Paolucci S. "Properties of Nanofluid." *Heat Transfer Enhancement with Nanofluids*. Boca Raton, FL: CRC Press, 2015. 1-44.

- **Invited Talks**

- Properties of Au-H<sub>2</sub>O Nanofluids Using Molecular Dynamics. Seminar at Brown University, Providence, RI. May 20, 2014
- Methods of Molecular Modeling. Invited lecture - Microparticle Dynamics. University of Notre Dame, 2010
- Transport Properties of Nanofluid. Invited talk at the 47th AIAA Aerospace Sciences Meeting, Orlando, FL. 2009
- Introductory Lecture to General Relativity. Invited lecture at the Liceo Scientifico M. Curie, Giulianova, Italy, 2005