

EDUCATION

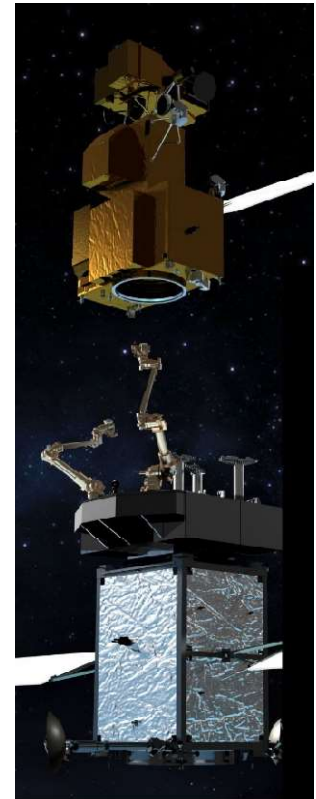
May 2000

B.S. Aerospace Engineering*University of Maryland at College Park. College Park, MD***EXPERIENCE**

07/16 – Present

On-orbit Servicing, Assembly and Manufacturing-1 (OSAM-1)*Servicing Payload Thermal Lead*

- OSAM-1 is a NASA GSFC robotic mission that will rendezvous with, grasp, refuel and relocate a government-owned satellite to extend its life. OSAM-1 is currently in Phase-C and is scheduled to Launch in 2026.
<https://nexis.gsfc.nasa.gov/osam-1.html>
- Responsible for the thermal design and analysis of the Robotic Servicing Payload on OSAM-1, using Thermal Desktop and SINDA/FLUINT software
- Manage a team of 5 thermal engineers and perform oversight of the different subsystem thermal designs and analyses
- Responsible for integrating subsystem thermal models into the observatory thermal model
- Responsible for the OSAM-1 thermal vacuum and thermal balance test and verification plans.
- Develop TCS specifications and interface control documents (ICD)
- Specify and procure thermal control hardware including radiators with embedded heat pipes, thermofoil heaters, thermostats, thermistors, multi-layer insulation (MLI), thermal interface materials and thermal coatings
- Perform review of vendor thermal design and analyses including the spacecraft bus, secondary payloads, and avionics boxes.
- Prepare and present design and analysis slides at project milestones and design reviews.



05/19 – Present

Deep Atmosphere Venus Investigation of Noble Gases Chemistry and Imaging (DAVINCI)*Descent Sphere Thermal Lead*

- NASA's DAVINCI mission will study the origin, evolution, and present state of Venus in unprecedented detail from near the top of the clouds to the planet's surface. <https://ssed.gsfc.nasa.gov/davinci/mission>
- Responsible for the design, analysis, and verification of the Descent Sphere Thermal Control Subsystem



Rommel N. Zara
Chief Thermal Engineer I
rzara@vertexaerospace.com

- The Descent Sphere is designed to survive a 2 year cruise environment before descending into the Venus atmosphere that has a pressure of 92 times that of earth and temperatures of 465°C on the Venus surface.

05/20 - Present **Tandem Reconnection and Cusp Electrodynamics Reconnaissance Satellites (TRACERS)**

Instrument Suite Thermal Lead

- TRACERS consists of two identically instrument spacecraft making observations in the magnetosphere cusp in 500 km sun-synchronous circular orbits. <https://tracers.physics.uiowa.edu/>
- Responsible for the thermal design, analysis and verification of the TRACERS Instrument Suite (TIS) which include the ACE, ACI instruments from University of Iowa and Southwest Research Institute.

07/21- Present **Total and Spectral Solar Irradiance Sensor -2 (TSIS-2)**

Thermal Subject Matter Expert (SME)

- NASA's Total and Spectral Solar Irradiance Sensor – 2, or TSIS-2, will measure the Sun's energy input to Earth and add to four decades of continuous solar irradiance data records. <https://eosps.nasa.gov/missions/total-and-spectral-solar-irradiance-sensor-2>
- Provide oversight of the thermal design, analysis, and verification of the TSIS-2 payload and spacecraft for NASA/GSFC.

11/06 - 07/16 **Magnetospheric Multi-Scale (MMS) Mission**

Senior Thermal Engineer/Deputy PDL

- MMS is a constellation of 4 identical spacecraft successfully launched in 2016. MMS investigates how the Sun's and Earth's magnetic fields connect and disconnect, explosively transferring energy from one to the other in a process that is important at the Sun, other planets, and everywhere in the universe, known as magnetic reconnection. <https://mms.gsfc.nasa.gov/>
- Responsible for the observatory thermal design and analysis
- Extensive knowledge and experience with Thermal Desktop™, TSS and SINDA/FLUINT thermal analysis tools

- Responsible for oversight of the observatory level Thermal Desktop™ models and presenting the thermal analysis results
- Responsible for managing the thermal design and analysis of more than twenty-five instruments on four observatories
- Responsible for receiving, reviewing and overseeing the integration of instrument thermal models with observatory thermal models
- Support thermal and spacecraft subsystem engineering meetings, trade studies and development tests
- Knowledge of thermal coatings, thermal control system (TCS) hardware and thermal design techniques
- Develop TCS specifications, interface control documents (ICD)
- Specify and procure thermal control hardware including heaters, thermostats, thermistors, heat pipes, multi-layer insulation (MLI), thermal interface materials and thermal coatings
- Oversight of TCS integration for spacecraft and instruments
- Present thermal design and analysis at system design reviews
- Experience in developing thermal vacuum test (TV) plans and procedures
- Experience in developing Work Order Authorizations (WOA)
- Experience with leading thermal vacuum tests at NASA/GSFC and Naval Research Lab (NRL)
- Performed thermal model correlation from thermal balance (TB) test data

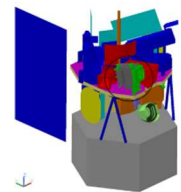


06/14-07/16

ICON - Extreme Ultra Violet (EUV) and Far Ultra Violet (FUV)

Thermal Lead

- Responsible for the thermal design, analysis and verification of the EUV and FUV instruments from the University of California, Berkeley's ICON spacecraft.
- Successfully completed TVAC, TBAL and model correlation of the EUV and FUV instruments



03/12-Present

Southwest Research Institute (SwRI)

Thermal Engineering Support

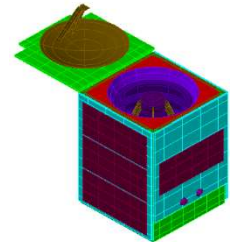
- Oversight of the thermal design and analysis of various SwRI instruments on IMAP including IMAP-HI, IMAP-LO, SWAPI, CoDICE, and MAG.
- Oversight of the MASPEX thermal design and analysis
- Performed thermal design and analysis the Heavy Ion Spectrometer (HIS), an instrument on the European Space Agency's (ESA's) Solar Orbiter; the ISOIS instrument suite on APL's Solar Probe Plus.

03/11-03/14

SkySat

Thermal Lead

- Responsible for the design, analysis, and documentation of a small-satellite constellation of imagers, built by Skybox, Inc. (now Google). Successful launch of SkySat-1 in November 2013 and SkySat-2 in July 2014.
- Currently supporting thermal design/analysis next generation SkySat-C that includes a propulsion system – heaters, thermostats, temperature sensors and isolation standoffs.

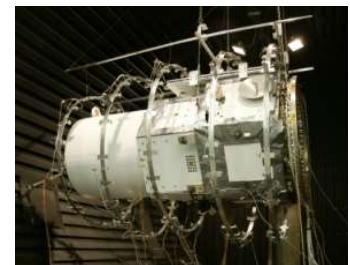


3/07-5/08

TacSat-3

Thermal Systems Lead Engineer

- Responsible for the design, analysis, hardware procurement, integration, verification, testing, and documentation of the TacSat-3 bus thermal control system for the Air Force Research Lab.
- Responsible for developing the post thermal balance final flight Thermal Desktop™ and SINDA/FLUINT temperature predictions
- Responsible for the TacSat-3 thermal subsystem schedule, cost, and resources.



1/04 - 2/07

THEMIS

Thermal Systems Lead Engineer

- Responsible for all aspects of the THEMIS (UCB/GSFC Constellation of 5 spacecraft) thermal control system including requirements definition, design, analysis, hardware procurement, integration, verification, testing, model correlation, documentation, and early orbit launch operations.
- Responsible for the THEMIS thermal subsystem schedule, cost, and resources.



06/06 - 05/07

GOES-ABI Loop Heat Pipe Radiator

Lead Thermal Analyst

- Performed thermal design analysis on a Two-Phase thermal Loop Heat Pipe (LHP) Radiator using Thermal Desktop™ (FloCad) and SINDA/FLUINT.

5/02 - 05/04

MLA Instrument

Lead Thermal Analyst

- Lead thermal analyst on the Mercury Laser Altimeter instrument. Active thermal control design with Thermo-Electric Cooler. Performed design and test analysis including STOP analysis using FEMAP, Thermal Desktop and SINDA/FLUINT.

11/00 - 05/02

QuikTOMS

Lead Thermal Analyst



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Chief Thermal Engineer I
rzara@vertexaerospace.com

- Lead thermal analyst on the Total Ozone Mapping Spectrometer (TOMS) instrument. Software used includes TSS, TRASYS and SINDA.
- 1/00 - 11/00 **EO-1**
Thermal Analyst
- Performed thermal analysis for flight and thermal balance/vacuum testing of the EO-1 spacecraft. Software used includes TSS and SINDA-85.
- 04/98 – 01/00 **Thermal Products Co-op**
- Supported design, manufacture and testing of Multi-Layer Insulation (MLI) blankets for FUSE, MAP and EO-1
 - Supported manufacturing and testing of Constant Conductance Heat Pipes, Capillary Pumped Loops, and Loop Heat Pipes for the Swales Thermal Products group. Programs include commercial and NASA products including Hubble Space Telescope CPL radiator.