

SWAPNIL SURYAKANT SALVI

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To get an engineering internship/co-op position where I can fully utilize my analytical and experimental ability. Experimental hands-on experience in heat transfer measurements of microelectronic devices and thin wires. Solid technical understanding of thermal and fluid transport principles, particularly for microelectronics. Competent in thermal property measurement of solids and liquids. Proficient in numerical and computational programming in MATLAB. Team player with motivation to accomplish engineering challenges.

TECHNICAL SKILLS

CAD Design Software: AutoCAD, Pro-E, SOLIDWORKS

Scientific Programming: MATLAB, Mathematica

Finite Element Software: COMSOL, ANSYS Workbench

Experiment Design Software: NI LabVIEW, SIMULINK.

Thermal Property measurement: Thermal characterization- Light Flash Apparatus (LFA), Transient Plane Source (TPS), Two thickness method (FOX50), Thermal Imaging / Infrared (IR) Camera

Other: Microsoft Office, Origin.

EDUCATION

Ph.D., Mechanical Engineering

University of Texas at Arlington – Arlington, TX

Expected - May 2021

GPA: 4.00/4.00

Master of Technology, Mechanical Engineering

Indian Institute of Technology Ropar

July 2016 - May 2018

GPA: 3.46/4.00

Bachelor of Engineering, Mechanical Engineering

University of Mumbai

July 2013 - April 2016

GPA: 3.58/4.00

PROJECTS

Detection of unusual thermal activities in 3D-IC using Infrared Camera

August 2018 - Present

- Designed and carried out experiments to detect unusual thermal activity in a multi-die 3D IC.
- Measured thermal signatures of the transistor plane using infrared camera.
- Carried out image processing using various algorithms such as Structural Similarity Index Method (SSIM), 2D Correlation Coefficient Method, etc. to detect anomalous thermal activity on the chip.
- Analyzed trade-offs in detection accuracy and speeds, as well as false positives and negatives.

Thermal conductivity measurement technique for wires of different materials

August 2018 - Present

- Designed an experiment to measure the thermal conductivity for different wires of similar/dissimilar diameters.
- Measured temperature distribution data utilizing Infrared Camera.
- Derived a model based on the theory of heat transfer in extended surfaces (fins).

Numerical Analysis of Phase Change Materials (PCM) for use in Energy Efficient Buildings

June 2017 - May 2018

- Derived a multiphase heat transfer model of a composite wall with PCM in COMSOL.
- Analyzed various Phase Changing Materials (PCMs) as a working medium for latent heat thermal storage systems.

Relevant Graduate-level Coursework

Convection Heat Transfer, Thermal Conduction, Advanced Classical Thermodynamics, Analytic Methods in Engineering, Fluid Dynamics

PROFESSIONAL WORK EXPERIENCE

Research Assistantship

August 2018 - Present

Microscale Thermophysics Laboratory, The University of Texas at Arlington.

- Measuring the thermal conductivity of wires of different materials.
- Designed the VI in LabVIEW to collect the experiment data and used MATLAB to analyze the data.
- Experienced in operating Light Flash Apparatus (LFA), Transient Plane Source (TPS), Two thickness method (FOX50).

Publications

- Salvi, S. S., Jain, A., "Detection of Unusual Thermal Activities in 3D IC using IR Thermal Imaging along with various Image Processing Techniques", *[In preparation]*.
- Salvi, S. S., Jain, A., "Thermal Conductivity Measurement Technique for Wires of Different Materials", *[In preparation]*.
- Salvi, S. S., Bhalla, V., Taylor, R. A., Khullar, V., Otanicar, T. O., Phelan, P. E., and Tyagi, H., "Technological Advances to Maximize Solar Collector Energy Output: A Review", *ASME Journal of Electronic Packaging*, Vol. 140(4), p. 040802. [DOI: 10.1115/1.4041219]

Accomplishments

- Mechanical and Aerospace Engineering STEM fellowship.