CURRICULUM VITAE

swamiooty@yahoo.com|drswaminathank@outlook.com| (M): 9487405539

SWAMINATHAN K | Academician, Research Scholar

Having 7+ years of Research experience and 6+ years of Teaching experience.

Over View

Ph.D. in Applied Mechanics & ME - Automobile Engineering

- **Experience of teaching/coaching students** by using interactive discussions and "hands-on" approach to help students learn and apply concepts in studies; taught students' various subjects.

- Credited for having **Research Papers** published in SCI indexed Journal and have presented papers in International and national conferences.

- Have good knowledge of Image processing in Matlab and IMAGEJ software. Wrote a separate code for processing the data acquired through experiments.

Academic Background

S No	Course	Institution	From	To	Class
1	Ph.D (Applied Mechanics)	Indian Institute of Technology	16/12/2010	13/06/2018	Completed
2	M.E (Automobile)	Madras Institute of Technology	13/08/2007	15/06/2009	First
3	B.E (Automobile)	Institute of Road and Transport Technology	28/07/2003	9/05/2007	First

Teaching Experience

S NO	Organization	Designation	From	To
1	St Peters institute of Higher Education and Research, Avadi	Assistant Professor	2/07/2009	15/12/2010
2	Indian Institute of Technology Madras	Teaching Assistant	16/12/2010	15/12/2015
3	Easwari Engineering College	Assistant Professor	25/02/21	31/05/2023
4	KCG College of Technology	Assistant Professor	04/03/2024	Currently Working

Academic Publications And Conferences

Papers in Refereed Journals

- Swaminathan K, Panchagnula MV - **Spreading & Hole Formation in Natural Oil Films on Aqueous Solutions**, _Colloids and Surfaces A: Physicochemical and Engineering Aspects_, 2017, 520, 796-804 (This journal is listed in SCI index and Scopus index)

- Swaminathan K, Panchagnula MV - **A Simple Oil-Water Experiment to Verify Oil Quality** (Under Review)

Presentations at Conferences (National and International)

- Swaminathan K- **Simulation of thermal comfort in passenger cabin with human model,** _2nd National Conference in Emerging Trends in Engineering & Technology SNCETET-2009,_ SriRajarajeswari Engineering college, Chennai, India.

- Swaminathan K and Panchagnula MV - **Drop Spreading in Partially Miscible Liquids** _at INCAM 2013, IIT -Madras_, Chennai, India

- Swaminathan K and Panchagnula MV - **Spontaneous Emulsification Dynamics of Natural Oils** _at 67th Annual Meeting of the APS DFD_, 2014, **San Francisco CA USA**

Workshop

- Part of the organizing committee which Organized the _Indo- US workshop on Frontiers of Liquid Atomization_ , 2011
- Poster presentation in the Research expo, Drop Breakup in Immiscible Liquids, Shastra 2013.
- Swaminathan K and Panchagnula MV - Poster presentation in **Spreading dynamics of Coconut oil drop in water** _Indo- French workshop in Fluid Mechanics_ , 2016, Khajuraho.

Research Work

Ph.D Thesis Title: Spreading Dynamics of Natural oil in Aqueous Solution

Overview of the Thesis

- **Dynamics of Spreading of Natural Oils on the Free Surface of Aqueous Solutions,** Studied the combined effect of spreading and de-wetting was studied through simple spreading experiments entailing. The oil spreading is recorded by camera and the resulting image was processed using Matlab software. Spreading of Natural Oil on water decreases the thickness of the film; at a critical thickness of around 10 micro meters there is localized sheet thinning on the various places of spreading film. This local sheet thinning leads to hole nucleation; performed scaling analysis of spreading process & calculated spreading rate was experimentally. The spreading measurements are purely visualization based and address the topology of spreading oil film on the substrate liquid; the effect of dissolution process was studied by using spreading experiments.
- **Self-propelled Octanoic Acid (OA) drops on Fatty Acid solutions**, Visualized trajectories of the drops on the substrate liquid. A decrease in OA drop velocity was observed when the saturation levels of aqueous solutions was increased. This research work can be used to mimic ameba motion.

Subjects Handled

- Fluid Mechanics
- Engineering Thermodynamics
- Applied Thermodynamics and Heat transfer
- Engineering Mechanics
- Automotive Chassis
- Automotive Transmission
- Production Technology
- Engine and Vehicle Management System
- Fundamentals of IC Engines
- Electric Vehicle Technology
- Automotive Energy sources
- Advance theory of IC engines
- Alternative Fuels and Energy systems

Labs Handled

- Fluid Mechanics Lab
- Engine Testing Lab
- Automotive Components Lab
- Solid Mechanics Lab
- Engineering Practice Lab
- Computational Techniques lab

Areas of interest

- Fluid Mechanics
- Heat transfer
- Multiphase flow
- Image processing

Software Skills

- Designing Software (Catia V5)
- Analyzing Software (Fluent and Star CD)
- Image Processing Software (MATLAB , Python and Image J)

Projects/Models Completed

- Designed a mixing chamber for hydrogen assisted combustion in CI engines.
- Built a Particle image Velocimetry code using both fixed grid and moving grid technique from the scratch in MATLAB.
- Path line and streak line of particle calculation using eliminating Errors using regression analysis.
- Modelled the hole nucleation and growth phenomena using potential flow theory.
- Currently working on the energy minimization techniques in modelling simultaneous spreading and hole nucleation mechanism on the vegetable oil/water system.
- Currently Working on the modelling diffusivity of soluble organic acids on aqueous solutions