Siddhartha Tripathi

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EDUCATIONAL QUALIFICATIONS

Examination	Institute	Year	CPI / %
Phd (Mechanical Engg.)	IIT Bombay	2017	9.25
M.Tech (Thermal&Fluids)	IIT Bombay	2011	9.17
B.Tech(Mechanical Engg.)	B.I.E.T, Jhansi	2003	79.20
Intermediate/+2 ISC	La Martiniere College, Lucknow	1996	73.20
Matriculation ICSE	La Martiniere College, Lucknow	1994	79.00

WORK EXPERIENCE

1. IIT Bombay **(Nov '17 – Mar '18)**

Project Research Scientist- Microfludics lab

- Designing novel microdevices to enable separation and enrichment of blood platelets
- Developing techniques to quantify platelet enrichment in blood plasma

2. Eaton –Pune **(July '11 – July'12)**

Engineer Aerospace-Electrical Sensing and Control

- Light lab development-Preparing the Experimental Set –up and Measurement procedures
- Testing of cockpit control panels

3. Hindustan Aeronautics Limited-Bangalore **(June '06 - June '09)**
ARDC-(Aircraft Research and Design Centre)

Engineer Design/Aerospace-Environmental Control Systems

- System design study of military aircrafts- IJT,LCA, and Sukhoi-30
- Flight monitoring and pilot presentations of IJT and LCA aircrafts
- Developed formulations for heat load and flow rate requirements of IJT aircraft

- Successfully solved the ‘water in cockpit’ problem which often occurred during take- off and landing of IJT aircraft
- Evaluated ECS system component designs and drawings
- Led a team comprising 4 members involved in testing of ECS system components

4. Indian Space Research Organization-Trivandrum (June’04 - Dec’04)

Liquid Propulsion System Center

*Scientist/Engineer ‘SC’-C*ryogenic C-25 GSLV Mk-3

- Evaluation of heat in-leak & boil off rates in cryogenic tanks considering varying wind speeds & environmental conditions prevailing at Launch pad
- Follow up of project progress with various groups involved in the integration of C-25 stage

AREAS OF INTEREST

Fluid Mechanics, Bio-microfluidics, Air- Conditioning of Aircrafts, and hemodynamics

KEY PROJECTS

PhD (IIT-B) (July ’12-Feb ‘17)

Blood Plasma Separation & Hydrodynamic Flow Focusing in microchannels

Development of a microfluidics platform for blood plasma separation with application to point-of-care diagnostics,understanding & attaining hydrodynamic flow focusing in microdevices with application to micro flowcytometry

Master’s (IIT- B) (June’10 - July’11)

Blood Plasma Separation in Microchannels

To explore, develop, test and validate passive separation techniques for efficient blood plasma separation in a microdevice

Bachelor’s (IIT- K) (June’02 - June’03)

Design of simulated moving port fixed bed heat exchanger

To study and design a heat exchangeraimed at improving its effectiveness by synchronizing the speed of port with speed of heat transfer zone

MAJOR ACHIEVEMENTS & TRAINING

- Secured **36th** rank in **GATE 2009** and **169th** rank in **GATE 2004**
- Qualified Indian Engineering Services, **IES 2006**
- Completed "Basics of Management" training program at **HAL- Management Academy, Bangalore, 2006**
- Completed "Basics of Aircrafts and Manufacturing" training program in Aerospace Department, **IIT Madras, 2007**
- Highlights of the doctoral research work on blood plasma separation published in **Times of India**, 24th Nov, 2014.http://timesofindia.indiatimes.com/city/mumbai/Innovative-microfluidic-chip-cuts-blood-amount-taken-for-tests-by-half/articleshow/45264458.cms
- Honored with the **Graduate Research Award 2015** for outstanding research contribution in 3rd year of PhD-Mechanical Engineering Department, IIT Bombay
- Honored with the **Award for excellence in thesis work 2015-2017,** for outstanding research contribution for PhD work, 55th Convocation of IIT Bombay, 2017

LIST OF PUBLICATIONS

Journals

1. **Tripathi, S.**, Prabhakar, A., Kumar, N., Singh, S.G., and Agrawal, A. (2013), *"Blood plasma separation in elevated dimension T-shaped microchannel",* **Biomedical Microdevices**, 15 (3), 415-425.

2. **Tripathi, S.**, P. Chakravarty, P., and Agrawal, A. (2014), "*On non-monotonic variation of hydrodynamic focusing width in a rectangular microchannel"*, **Current Science**, 107(8), 1260-1274.

3. Prabhakar, A., Kumar, B.V., **Tripathi, S.**, and Agrawal, A. (2015), *"A novel, compact and efficient microchannel arrangement with multiple hydrodynamic effects for blood plasma separation",* **Microfluidics and Nanofluidics**, 18(5-6), 995-1006.

4. **Tripathi, S.**, Kumar, B.V., Prabhakar, A., Joshi, S.S., and Agrawal, A. (2015), *"Performance study of microfluidic device for blood plasma separation - A designer's perspective,"* **Journal of Micromechanics and Microengineering**, 25(8), 084004.

5. **Tripathi, S.**, Kumar, B.V., Prabhakar, A., Joshi, S.S., and Agrawal, A. (2015), *"Passive blood plasma separation at the microscale: A review of design principles and microdevices",* **Journal of Micromechanics and Microengineering**, 25(8), 083001. (Invited review)

6. **Tripathi, S.**, Kumar, A., Kumar, Y. V. B. V., & Agrawal, A. (2016). "*Three-dimensional hydrodynamic flow focusing of dye, particles and cells in a microfluidic device by employing two bends of opposite curvature*", **Microfluidics and Nanofluidics**, *20*(2), 1-14.

7. **Tripathi, S.**, Kumar, Y. V. B. V., and Agrawal, A. (2016). *"Separation in Microfluidic devices: A case study on hydrodynamic blood plasma separation technique",* **Annals of the Indian National Academy of Engineering (INAE),** Vol. XIII.

8. **Tripathi, S.**, Kumar, B.V., Prabhakar, A., Joshi, S.S., and Agrawal, A. (2016), *"Microdevice for plasma separation from whole human blood using bio-physical and geometrical effects",* **Scientific Reports,** 6,26749.

Patents

1. **S. Tripathi**, A. Kumar, and A. Agrawal, **Indian Patent** *on "Microfluidic device for threedimensional hydrodynamic focusing of a sample fluid using a sheath fluid and method of fabricating the same*", Appl No. 96/MUM/ 2015.

2. **S. Tripathi**, Y.V. Varun Kumar, and A. Agrawal, **Indian Patent** *on "Microdevice for separating plasma from human blood"*,Appl No. PCT/IN2016/000166.

3. **S. Tripathi**, Y.V. Varun Kumar, and A. Agrawal, **International Patent** *on "Microdevice for separating plasma from human blood"*,Appl No. US Patent Application No 15/565,515.

Conferences and presentations

1. Prabhakar, A., Bala Varun Kumar, Y.V., **Tripathi, S**., Singh, S.G., Agrawal, A., *A Novel, compact and efficient microfluidic device for blood plasma separation*, Paper 167, presented at 39th National Conference on Fluid Mechanics and Fluid Power, SVNIT, Surat, 13-15 December 2012.

2. **Tripathi, S**., Prabhakar, A.,Bala Varun Kumar, Y.V., Singh, S.G., Kumar, N., Agrawal, A.,*Microfluidic device for Blood Plasma Separation*, Poster Presentation MEGRES-2014, Mechanical Department, IIT Bombay.

3. **Tripathi, S.,**Bala Varun Kumar, Y.V., Agrawal, A., *Hydrodynamic microdevice for Blood Plasma Separation*, Poster presentation, Industry Day, WRCB, IITB, 5th August, 2016.

4. **Tripathi, S**., Bala Varun Kumar, Y.V., Agrawal, A., *Hydrodynamic microdevice for Blood Plasma Separation*, Poster presentation, IITB-NTU Joint Symposium on Healthcare Technologies, 28-30th September, 2016.

TECHNICAL/ SOFT SKILLS

CATIA, AUTOCAD, ANSYS, MATLAB, FORTRAN and C programming