



# Pranav Sudersan

PhD student

- Indian
- December 8, 1992
- #1308, Isaac-Fulda-Allee 4, 55124 Mainz, Germany
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## Interests

- Wetting and adhesion
- Bio-inspiration
- Interfacial science
- Nanostructured materials
- Contact mechanics

## Skills

### Experimental:

- AFM
- Optical microscopy
- Surface modification
- Building setups
- DSC, Rheometry

### Programming:

- Python
- LABVIEW
- MATLAB
- LaTeX

### Software:

- Surface Evolver
- ImageJ
- Git

## Education

- 2019 – ongoing **Ph.D. in Chemistry** Max Planck Graduate Center, Mainz  
**Title:** Understanding reversible underwater adhesion in terrestrial ladybug beetles  
**Supervisors:** Prof. Dr. Hans-Jürgen Butt, Prof. Dr. Eduard Arzt  
**Projects:**
  - In-vivo underwater adhesion measurements on insect legs
  - Surface tension measurement of insect secretions using AFM
  - Theoretical modelling of the mechanism of reversible adhesion

Adhesion setup AFM Surface Evolver Image analysis

2010 – 2015 **M.Tech and B.Tech in Chemical Engineering** IIT Bombay, India  
**Title:** Preparation and characterization of sugar-oil microemulsion glasses  
**Supervisors:** Prof. Jyoti R. Seth  
**Projects:**
  - Phase study of solid microemulsions based on sugar-oil mixtures
  - Structural characterization by SEM, SANS, DSC and Rheology

Material science Experimental design

## Working Experience

- 2018 **Project Assistant** Inst. of Chemical Tech., India  
**Projects:**
  - Efficacy of soap formulations using dynamic interfacial tension

Interfacial science Data collection

2016 – 2018 **Research Associate** IIT Bombay, India  
**Projects:**
  - Synthesize Interpenetrating Polymer Network (IPN) materials
  - Model unusual self-assembly behaviour of polyelectrolytes

Experimental design Modelling MATLAB

2015 – 2016 **Business Data Analyst** HSBC, India  
**Projects:**
  - Automate workflow to identify regulatory anomalies in sales

Statistical analysis Team management

## Publications & Patents

- 2023 **Sudersan, P.**; Kappl, M. Mechanisms of detachment in fibrillar adhesive systems. *Journal of Theoretical Biology* 2023, 557, 111315. doi: 10.1016/j.jtbi.2022.111315
- 2021 **Sudersan, P.**; Kappl, M.; Pinchasik, B. E.; Butt, H. J.; Endlein, T. Wetting of the tarsal adhesive fluid determines underwater adhesion in ladybird beetles. *Journal of Experimental Biology* 2021, 224 (20): jeb242852. doi: 10.1242/jeb.242852
- 2023 Song, J.; Hou, Y.; **Sudersan, P.**; Lam, C. W. E.; Poulikakos, D.; Butt, H. J.; Yeung, K. L. Inhibition of Condensation-Induced Wetting Transition by Nano-Hierarchical Surfaces. *Chemical Engineering Journal* 2023; 460, 141761. doi: 10.1016/j.cej.2023.141761
- 2019 **Sudersan, P.**; Seth, J. S. Method for preparing bi-continuous interpenetrating polymer network. *Intellectual Property India*; Patent no: 390921

## Additional Information

**GRE (2017)** Total: 326/340, Quant.: 170/170, Verbal: 156/170

**Languages** English, Hindi, Malayalam (native speaker)

German, Spanish (learning)

**Extracurricular** playing guitar, DIY electronics, biking

References available on request

March 22, 2023

Pranav Sudersan