

# About Me & My Work

## Dr. Ved Prakash Ranjan

*Assistant Professor, Environmental Engineering Division*

*Department of Civil Engineering, IIT Jammu, India*

- Solid Waste Management specialist with a focus on **circular economy** and **microplastic pollution**.
- Experienced in **waste stream characterization** and **recycling strategy development** for urban and institutional systems
- Philosophy: True sustainability exists only when nature itself approves our actions.



# What I Built or Solved



**Innovative Focus:** Investigated the unnoticed release of **microplastic particles** from the inner plastic lining of **disposable paper cups** when exposed to hot beverages.



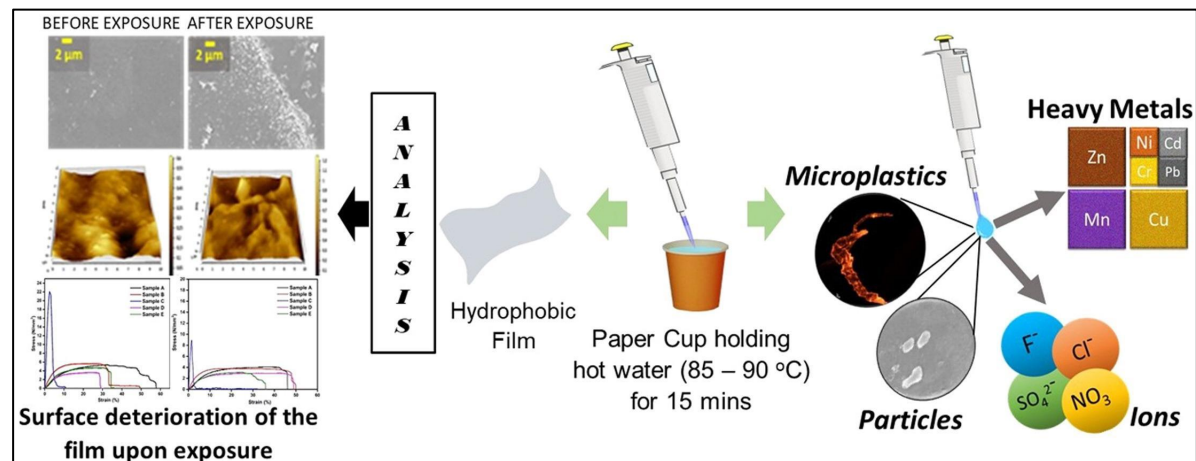
**Problem Addressed:** Challenges the common misconception that paper cups are eco-friendly, exposing their **contribution to hidden microplastic pollution** and potential human health risks.



**Real-World Relevance:** Conducted in the **Indian urban consumption context**, using cups widely available across markets; making findings directly applicable to public health and waste policy.

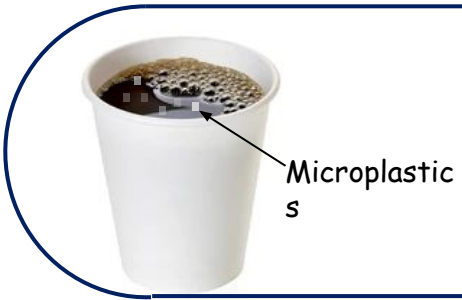


**What Sets It Apart:** Unlike traditional studies on bottles and packaging, this research uniquely targets **short-use everyday items**; combines **real-use simulation** with **quantitative microplastic analysis** for evidence-based awareness.



# The Impact So Far

## Research Outcomes



- 4 out of 5 paper cups were lined with **HDPE** grade of plastics
- ~**25,000 microplastics** released from 1 paper cup in **100 mL** hot water within **15 minutes**
- Size range**: 150 nm (min) to 4.75  $\mu$ m (max)
- Heavy metals like **Lead (Pb)** and **Nickel (Ni)** leached into water from all samples
- Fluoride** exceeded the **permissible limit (1.5 ppm)** in one sample



**Policy Insight:** Supports urgent need to rethink single-use items labeled as 'eco-friendly' and encourages regulation on plastic-lined paper products.

## Publication



## Recognition



Displayed at Sree Shivaji Sphoorty Kendram, Telangana

# Why It Matters to the BlueCities Network

- This work is easily scalable to other cities and rivers with high use of single-use food packaging, helping local bodies directly assess microplastic pollution sources.
- The insights can support policy decisions and consumer awareness campaigns in BlueCities regions by showing how “eco-alternatives” may still contribute to pollution.
- I am open to collaborations in the form of:
  - Joint monitoring studies
  - Policy translation support
  - Capacity building workshops
  - Community-led sampling programs
- From the BlueCities Network, I seek:
  - Partners in water quality and solid waste initiatives
  - Support to apply my findings in real-world urban contexts