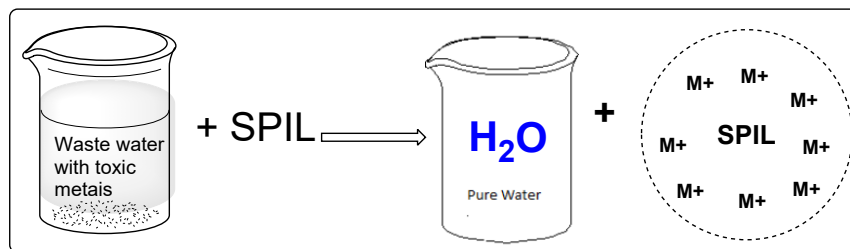


# 'Nature Inspired Sugar Derived Biomimetic Polymers for Capturing and Treating Waste from Urban Water'

## Graphical Abstract/ Layout



## Project Description

In nature, carbohydrates are the most abundant and widely researched bio-organic molecules due to their non-toxic nature and easier availability. Studying these molecules for value-added applications is an important area of research, particularly carbohydrate derived poly-chiral ionic liquids for treating wastewater, carbohydrate-based chiral auxiliaries, chiral catalysts and reagents towards asymmetric synthesis, to name a few. Our research group has established strong National and International Collaborations with reputed Universities/Institutions with a focus on the design and synthesis of a new class of carbohydrate derived sugar-based poly-ionic liquids from naturally available sources and evaluating their applications in capturing and treating wastewater from urban areas.

The successful reduction and detection of these heavy metal ions demonstrate the sensor's potential for practical applications. To further validate our findings, we collected real samples in industrial areas near water sources, where heavy metal pollution is a concern. This project aims to provide a reliable method for monitoring water quality, ensuring safer environments. Our research highlights the potential of sugar-based poly ionic liquids in environmental monitoring, offering an effective solution for detecting and reducing heavy metal contamination. The findings indicate that this approach can significantly contribute to public health protection by providing accurate and timely detection of hazardous substances in water sources. This work not only advances sensor technology but also emphasizes the importance of innovative greener materials addressing. The outcome of this project would be collaborative research involving Indian and foreign researchers as well as Master students and Ph.D. scholars which will lead to mutual knowledge transfer, India-Taiwan workshops, monographs and joint development of green products and technologies for a sustainable future of mankind.

## Products/ Instruments/ Results/ Outreach Activities



### Principal Investigator

Dr. Rajasekhara Reddy S

Professor Grade 1

School of Advanced Sciences (SAS)

Department of Chemistry



### Co-Principal Investigator

Dr. Anand Prabhu A

Professor

School of Advanced Sciences (SAS)

Department of Chemistry

\*\*\*

### Name of the Funding Agency

Scheme for Promotion of Academic and Research Collaboration Academic and Research Collaboration (RGEMS)

### Name of the Scheme

Ministry of Human Resource Development (MHRD)

### Sanctioned Amount (in Rupees)

Rs. 45,42,000

### Duration of the Project (years)

3