

**AARUAPADAI VEEDU INSTITUTE OF TECHNOLOGY**  
**DEPARTMENT OF BIOTECHNOLOGY**  
**REPORT ON WEBINAR ENTITLED “**  
**“BIO SURFACTANTS AN UBIQUITOUS BIOMOLECULE FOR**  
**ENVIRONMENTAL APPLICATION”**

**14-6-2022**

The webinar on “**Bio surfactants a ubiquitous biomolecule for environmental application**” was organized by Department of Biotechnology, AVIT. Dr. A.Nirmala, Assistant Professor (Gr-II), Biotechnology welcomed the chief guest and the gatherings, which was followed by the introduction of the guest speaker. After that, chief guest **Dr.K.Ramani**, Associate Professor in the Department of Biotechnology, School of Bioengineering, SRM Institute of Science and Technology, Kattankulathur, Chennai delivered the lecture on Bio surfactants , its types, their uses in waste water treatment, different methods used for the treatment process, Physiochemical properties of Bio surfactants, types of Bio surfactants available in the market and biosurfactants uses in oil spilled water treatment etc.,. At the end she disused about the funding opportunity and on-going research in this field etc.

The speaker shared some real time situations and asked the students view about it and how the situation could be tackled and made the session very interactive. The lecture was followed by a discussion session where knowledge sharing occurred. Finally the webinar was successfully completed by a vote of thanks delivered by Mrs M.Subathra, Assistant Professor, Department of Biotechnology, AVIT.



## Department of Biotechnology

*Cordially invites you all for the Guest Lecture on*

# Biosurfactants - An Ubiquitous Biomolecule for Environmental Applications

10<sup>th</sup> June 2022 @ 01.30 p.m. to 02.30 p.m. | Platform : Zoom

*Chief Guest*

**Dr. K. Ramani**

Associate Professor

Department of Biotechnology, School of Bioengineering  
SRM Institute of Science and Technology  
Kattankulathur

*In the presence of*

**Dr. G. Selvakumar**

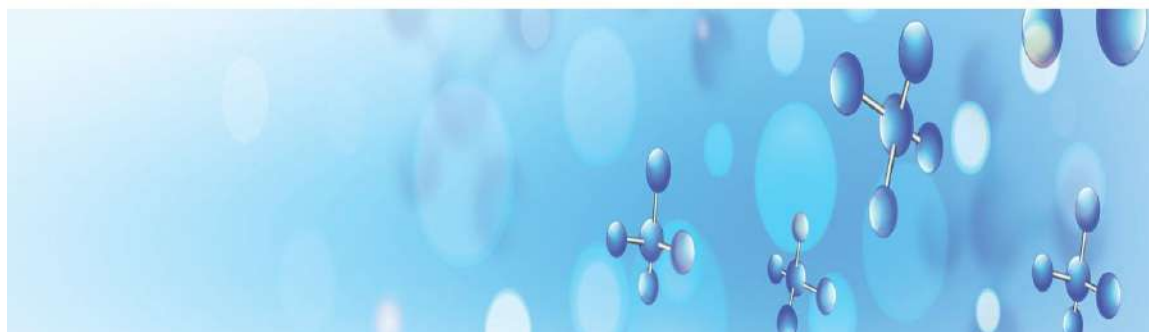
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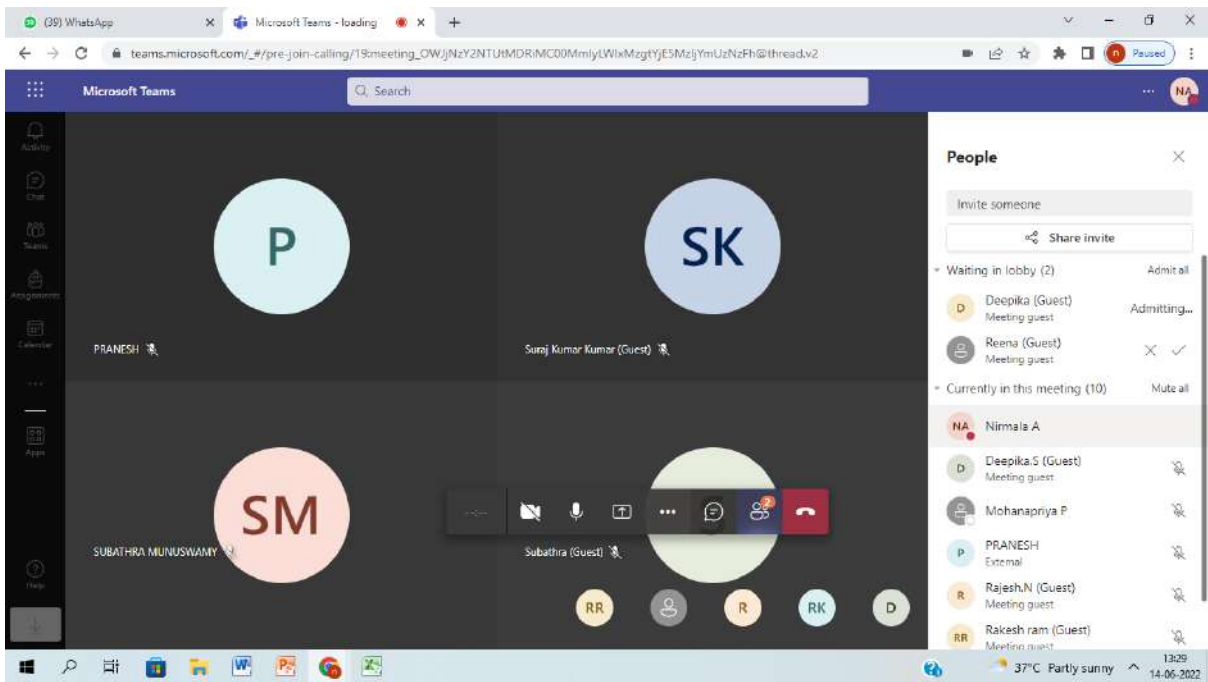
**Dr. R. Devika**

Prof & HoD, Biotech

**Event Coordinator**

**Dr. A. Nirmala, AP (Gr II)**






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# Biosurfactants-An Ubiquitous Biomolecule for Industrial and Environmental Applications



**Dr.K.Ramani**  
Associate Professor  
Biomolecules and Biocatalysis Laboratory  
Department of Biotechnology  
School of Bioengineering

People:

- Invite someone
- Share invite
- Currently in this meeting (30)
- Mute all
- Nirmala A
- Hemalatha M (Biotech) (Guest)
- kowsalya G (bio tech ) (Guest)
- amit kumar (Guest)
- Anshu Kumar (Guest)
- Britu Kumar (Guest)
- chandan kumar (Guest)
- Chandrashekar Kumar (Gu...)

System tray: 37°C Partly sunny 13:35 14-06-2022

Microsoft Teams Meeting Interface

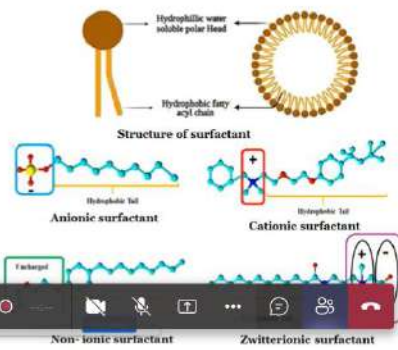
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## SURFACTANTS- INTRODUCTION

Surfactant stand for **SURFace ACTIVE AgeNT** which decreases the surface and interfacial tension between the liquid-liquid, solid-liquid or air-liquid medium

Amphipathic molecule - **hydrophilic head and hydrophobic tail.**

The polar head part can be a single molecule or an oligomeric chain whereas, the non-polar tail part contains hydrocarbon in a straight chain, branched, ring structures, multiple chain forms etc.



Structure of surfactant

- Hydrophilic water soluble polar Head
- Hydrophobic fatty acid chain

Types of surfactants:

- Anionic surfactant
- Cationic surfactant
- Non-ionic surfactant
- Zwitterionic surfactant

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### TYPES OF SURFACTANTS AND APPLICATIONS

Surfactant type	Example	Use
Anionic	Alkyl sulfates, soaps, Calsoft®, Texapon®	50 % of overall industrial production, laundry detergent, dishwashing liquids, shampoos
Cationic	Quaternary ammonium salts	Used together with nonionic surfactants but not with anionic, softeners in textiles, anti-static additives
Nonionic	Ethoxylated aliphatic alcohol, polyoxyethylene surfactants, Triton™ X-100, Span®, Tergitol™	45 % of overall industrial production, a wetting agent in coatings, food ingredient
Zwitterionic	Betain	

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- Anshu Kumar (Guest) On hold
- Britu Kumar (Guest)
- chandan kumar (Guest)
- Chandrashekhhar Kumar (Gu...)

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### Cont... Physico-chemical properties of biosurfactants

Biosurfactant	Class	Microbial origin	Physicochemical properties	Physiological roles
High molecular weight-Bioemulsifiers	RAG-1 Emulsion	<i>Acinetobacter</i> sp. ATCC 31012 (RAG-1)	Lippolysaccharides, Lipid moiety (unsaturated fatty acid of C10-18) Polysaccharide moiety (D-galactosamine, D-galactosaminuronic acid, di-amino-6-deoxy-D-glucose)	Increase surface area and bioavailability of poorly-soluble substrates Binding to toxic heavy metals
	BD4 Emulsion	<i>Acinetobacter calcoaceticus</i> BD4 13	Protein-polysaccharide complex, Polysaccharide moiety (repeating heptasaccharides of L-rhamnose, D-glucouronic acid, D-mannose)	Stabilizes oil-in-water emulsions
	Atsan	<i>Acinetobacter radresistans</i> KAS3	Alanine-containing polysaccharide and proteins	Emulsification and solubilization activity
	Mannoproteins	<i>Saccharomyces cerevisiae</i> <i>Kluyveromyces marxianus</i>	Polysaccharide and proteins	Formation of stable emulsion with hydrophobic substrates Stimulation of immune
Uronic acid bioemulsifiers				Emulsification of hydrocarbons

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