



Department of Chemistry,
FAS, Manav Rachna University
is organizing a

Webinar on Green chemistry
for Sustainability

'How Green Chemistry Practices can help Steer to a Sustainable Future?'



Dr. Hemant Choudhary

Scientist at Sandia National
Laboratories, USA

Thursday | **10:00 AM**
Sept 23, 2021 | **TO 11:30AM**

Joining link: <https://bit.ly/3EePiOv>

TITLE - Webinar on “How Green Chemistry Practices can help Steer to a Sustainable Future”

Date: 23rd September 2021

Venue: Online mode

Resource Persons: **Dr. Hemant Choudhary**, *Scientist at Sandia National Laboratories, USA*

Dr. Choudhary is currently working as Scientist at Sandia National Laboratories, USA. He received his Ph.D. in Materials Science from Japan Advanced Institute of Science and Technology (JAIST), Japan in 2015 and had been a JSPS fellow for PhD and Post-doctorate. Thereafter he joined Prof. Robin D Rogers' research group at McGill University, Canada and The University of Alabama, USA. He, so far, holds 9 patent and patent applications and has published 27 peer reviewed articles and 1 book chapter in chemical and materials science.

The session started with a brief introduction of Dr. Choudhary by Dr. Jaya Tuteja and following that Dr. Choudhary shared his academic background and places he encountered during his course of study. His talk was majorly focused on green chemistry importance and its implication in our day to day life. He educated our students to plan their reactions well on paper before entering the lab that would save up the chemicals and in turn our environment. He guided them to work on a minimal scale in order to decrease the chemical waste and replacing the carcinogenic reactants with the safer and greener one.

In his talk he emphasized on the recent crisis of fuel sources, strong urge to develop renewable fuel precursors, how to handle nuclear generated waste, utilization of catalysts for various organic/inorganic transitions, implication of ionic liquids as greener solvents and many more. Overall it can be summarized that the lecture was very much beneficial to the listeners, we had more than 50 participants in the talk including faculties, students from various batches, and 2 of renowned faculties form University of Delhi.

REC Hemant Choudhary is presenting

Ionic Liquids

JBEI 12
Joint BioEnergy Institute
Office of Science

...ionic liquids are salts with a melting point below 100 °C and possessing an organic cation

- Also called as RTILs, TSILs, molten salts, etc
- Coulombic interactions
- Negligible vapor pressure
- Tunable physicochemical properties
- High ionic conductivity
- Thermal and chemical stability

Cation governs stability and physicochemical properties

piperidinium pyridinium pyrrolidinium imidazolium pyrazolium phosphonium ammonium / cholinium

Anion controls functionality and chemistry

halides / pseudohalides alkylsulfonates hydrogensulfates carboxylates azirino acid anions haloborates

But why do I care?

- ILs provide solutions to the problems created / associated by / with molecular solvents

1-ethyl-3-methylimidazolium acetate ([Emim][Ace]) cholinium lysinate ([Ch][Lys])

Holroyd and Rogers in Ionic Liquids in Synthesis 2002, 41; Mood et al, Renewable Sustainable Energy Revs 2013, 27, 77; Yoo et al, Chem Opin: Green Gas Chem 2017, 5, 6; Kumar et al, Fuel Process Technol 2020, 199, 106244; Tor et al, Biotechnol Bioeng 2016, 173, 340; Hu et al, Greenour Technol 2016, 242, 139; Stanton et al., J. J. Biol. Macromol 2016, 106, 333; Nayal et al, Anal Chem 2019, 91(5), 1.

10:37 AM | Sustainable Chemistry special lecture

REC Hemant Choudhary is presenting

Personal Background

JBEI 2
Joint BioEnergy Institute
Office of Science

Emeryville, USA
Energy Sustainability Commercialization
Sandia National Laboratories
JBEI
ABAPDU

Tuscaloosa, USA
Ionic Liquids
Radiochemistry
Crystallography
Polymerization
A

Montreal, Canada
Ionic Liquids
Separation Science

New Delhi, India
Organic Chemistry
Process Chemistry

Kolkata, India
Chemistry

Nomi, Japan
Materials Science
Inorganic Chemistry
Surface Science
X-ray Techniques

Learning at Each Step to Gain Knowledge and Expertise in all of the Chemical, Biological, and Materials Science... Still, there are Areas to Explore and Learn

10:11 AM | Sustainable Chemistry special lecture

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Our Five Research Divisions

JBEI
Joint BioEnergy Institute

- 1. Feedstocks**
- 2. Deconstruction**
 - A. Pretreatment with chemicals & enzymes
 - B. Plants are broken down to release their sugars
 - C. The sugars feed fuel-producing microorganisms
- 3. Biofuels and Bioproducts**

Technology

Lifecycle & Economics

Kirti Dhankar Ankit Tomar Tannu Kaliramna
Vaishali vashisth ritu bisht Nikita Thakkur
Paragi Ahuja Ritika Jaiswal Hemant Choud...
ARPIT SAND 35 others You

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How Green Chemistry Practices can help Steer to a Sustainable Future?

Hemant Choudhary
23rd September 2021

Jaya Tuteja ARPIT SAND
Kirti Dhankar Ankit Tomar Tannu Kaliramna
Vaishali vashisth ritu bisht Nikita Thakkur
Paragi Ahuja 31 others You

REC

Richa Saha Jaya Tuteja ARPIT SAND SUDHISH KUMAR Hemant Chou... Tannu Kaliramna Divya Choudha... ritu bisht Sakshi Sharma
SIMRAN MEHRA Ritika Jaiswal Priti Gupta Kirti Dhankar Megha Bansal APARNA VYAS kirti fagna Divija Sekhri Harsh rajput
Indu Sidhwani Bhavya Bansal e Rawat shreya adlakha Nitin Garg yash dubey Navin Sharma Manmohan Sin... Ritika Sharma
Dev Gupta Bhoomika Para... Ritika Choudha... Bhanu Punj Anuradha Raika Priyanka Mishra Baldeep Singh 12 others You

10:56 AM | Sustainable Chemistry special lecture