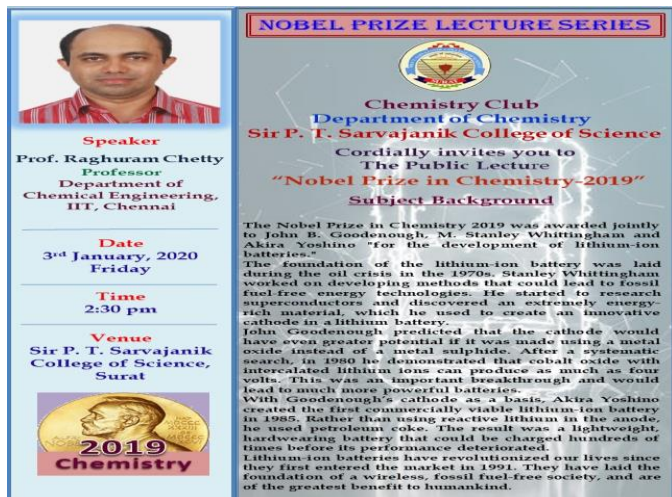


Invited talk on “Nobel Prize in Chemistry - 2019”

Date: 03-01-2020

Participants: 80

Resource Person: Prof. Raghuram Chetty, Department of Chemical engineering, Indian Institute of Technology (IIT), Chennai



NOBEL PRIZE LECTURE SERIES

Chemistry Club
Department of Chemistry
Sir P. T. Sarvajani College of Science

Cordially invites you to
The Public Lecture
“Nobel Prize in Chemistry-2019”
Subject Background

Speaker
Prof. Raghuram Chetty
Professor
Department of
Chemical Engineering,
IIT, Chennai

Date
3rd January, 2020
Friday

Time
2:30 pm

Venue
Sir P. T. Sarvajani
College of Science,
Surat

2019 Chemistry

The Nobel Prize in Chemistry 2019 was awarded jointly to John B. Goodenough, M. Stanley Whittingham and Akira Yoshino “for the development of lithium-ion batteries.” The foundation of the lithium-ion battery was laid during the oil crisis in the 1970s: Stanley Whittingham worked on developing methods that could lead to fossil fuel-free energy technologies. He started to research superconductors and discovered an extremely energy-rich material, which he used to create an innovative cathode in a lithium battery. John Goodenough predicted that the cathode would have even greater potential if it was made using a metal oxide instead of a metal sulphide. After a systematic search, in 1980 he demonstrated that cobalt oxide with intercalated lithium ions can produce as much as four volts. This was an important breakthrough and would lead to much more powerful batteries. With Goodenough’s cathode as a basis, Akira Yoshino created the first commercially viable lithium-ion battery in 1985. Rather than using reactive lithium in the anode, he used petroleum coke. The result was a lightweight, hardwearing battery that could be charged hundreds of times before its performance deteriorated. Lithium-ion batteries have revolutionized our lives since they first entered the market in 1991. They have laid the foundation of a wireless, fossil fuel-free society, and are of the greatest benefit to humankind.



Brief Report:

The lithium-ion battery has been an important part of the mobile electronics revolution, as well as in the ongoing switch from vehicles powered by fossil fuels to electrically powered transportation. With its high potential, high energy density and capacity, the lithium-ion battery has contributed a lot in improving our lives and will continue to do so in the years to come. In this talk, Prof. Raghuram Chetty discussed the fundamentals and applications of lithium-ion batteries and the contributions made by Prof. John Goodenough, Prof. Stanley Whittingham, and Prof. Akira Yoshino towards the development of lithium-ion batteries, which lead to the 2019 Nobel Prize in Chemistry. Prof. Chetty delivered his talk in a very simple language. The talk was followed by an interesting session of question- answer.