LiFi Networks

❑ Goals of the Project

❖ Implementation of real-time bi-directional communication channel (link length 3 m)

    o Downstream (Visible light): at data rate of 500 Mbps

    o Upstream (Infrared): at data rate of 10 Mbps

❖ Incorporating fast handovers to support user mobility of less than 5 km/h

❖ Design of media access control (MAC) layer to ensure latency below 100 ms and packet loss rate below 5% for a user density of 1 person/5m^2

❑ Achievements

❖ Audio streaming

❖ Video streaming

❖ Transmitted on-off modulated data at the rate of 10 Mbps over a LiFi optical wireless link

Prof Abhishek Dixit
Department of Electrical Engineering,
Indian Institute of Technology Delhi, Hauz Khas, New Delhi- 110016
+91-11-2659-6301   abhishek.dixit@iitd.ac.in

LiFi Networks

❖ **LiFi technology is a reliable solution for 5G wireless challenges.**

❖ **LED lights are used both for communication and illumination.**

❖ **Light intensity is changed at a very high speed to carry information invisible to human eye.**

❖ **LED acts as a wireless access point.**

❖ **Access point density is very high as compared to other commercially available wireless technologies.**

❖ **Least probability of signal interception.**

❖ **First RF interference free wireless technology.**

❖ **No adverse effects on humans.**

❖ **Highly secure.**

❖ **Green technology.**

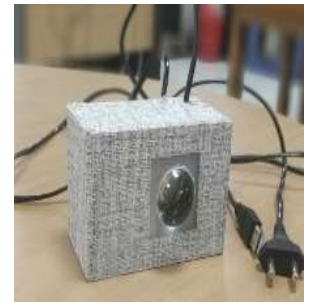❖ **Easy implementation into the existing infrastructure.**

Designed LiFi Modules

Fabricated LED
driver rear view

Transmitter
module
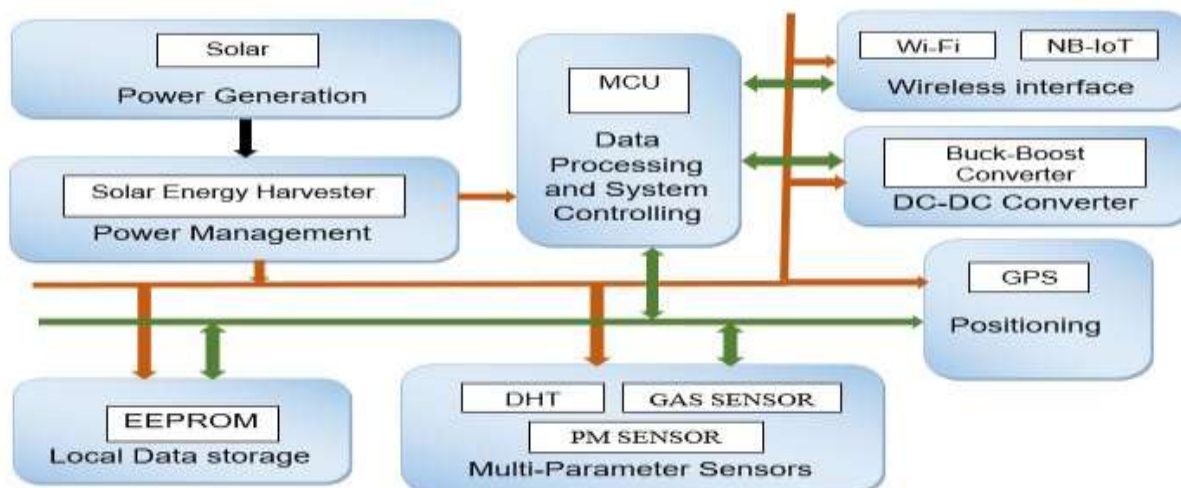(10 x 6 x 7 cm)

Fabricated receiver
rear view

Receiver
module
(10 x 6 x 5 cm)

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Air Pollution Monitoring 5G Testbed Powered by Solar Energy Harvester

SYSTEM OVERVIEW

NBIoT

Payali Das, Sushmita Ghosh, Sandeep Kaur,
Shouri Chatterjee, Swades De
Dept. of Electrical Engg. IIT Delhi