

## **Research Interest May 2017**

### **Asst. Prof. Dr. Jagadeesh Babu Bodapati**

My research interests are: Organic Photovoltaics and Organic Electronics based on Perylene and Naphthalene Dyes.

My first project is based on synthesis and detailed characterization of conjugated aromatic (perylene and naphthalene) imide-dyes. These dyes are excellent electron acceptors and became promising materials for photovoltaics and organic electronics. Perylene dyes are very attractive with great potential applications in the photonic field as they possess high photochemical, electrochemical, and thermal stabilities, high absorption capacities, and light emitting properties. One of the great advantages of these dyes is regulation of the properties by changing the imide and bay substituents of perylene and naphthalene cores. This can drive to produce various perylene and naphthalene imide-dyes (PEN IDs) with exciting properties according to the necessity of commercial applications. Moreover, by modifying the structure of these dyes, the properties can be altered towards the drug delivery applications.

In my second project, we focused on the synthesis of naphthalene polyimides toward the photonic applications. The synthesized naphthalene dyes showed concentration dependent color tunability.

In my third project, we modified the structure of PEN IDs by incorporating chitosan moieties towards the drug delivery applications.

In my fourth and fifth projects, we concentrated on the macromolecules incorporating both the perylene and naphthalene dyes. The macromolecules showed long range absorption abilities which is one of the major factors concerning the absorption of sun light.

Now, in multiple projects, we are focused on increasing the efficiency of organic solar cells incorporating PEN IDs.