

SYNTHESIS OF MATERIALS FOR ELECTROLUMINESCENCE APPLICATIONS

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Project Description:

Organic light emitting diodes and electroluminescent organics have attracted considerable interest in the recent past because of their potential applications in display devices. Various derivatives of poly-phenylene vinylene appear to show promise because of their excellent luminescence characteristics. Recently we have been working on the synthesis of phenylene-vinylene units containing nitrogen heterocyclic ligands that can be polymerized by coordination of the nitrogen heterocycle to metal ions (i.e. Zn^{2+} , Fe^{2+} , Ru^{2+} , Ir^{3+}). The luminescence of the derivatives we have made thus far spans the green and red portions of the spectrum. Our need is to develop additional derivatives that exhibit blue emission.

Project Objectives:

Make electroluminescent metal organic compounds that emit blue light. Synthesize nitrogen heterocyclic molecules and metal complexes of the molecules. Examine the luminescence of the molecules. Work on the construction of electroluminescent cells.

Prerequisites:

A student with a background in Organic Chemistry is preferred. The student will spend most of his/her time doing synthesis of organic and metal organic compounds. Students will gain experience in synthetic methodology, NMR spectroscopy and fluorescence spectroscopy.