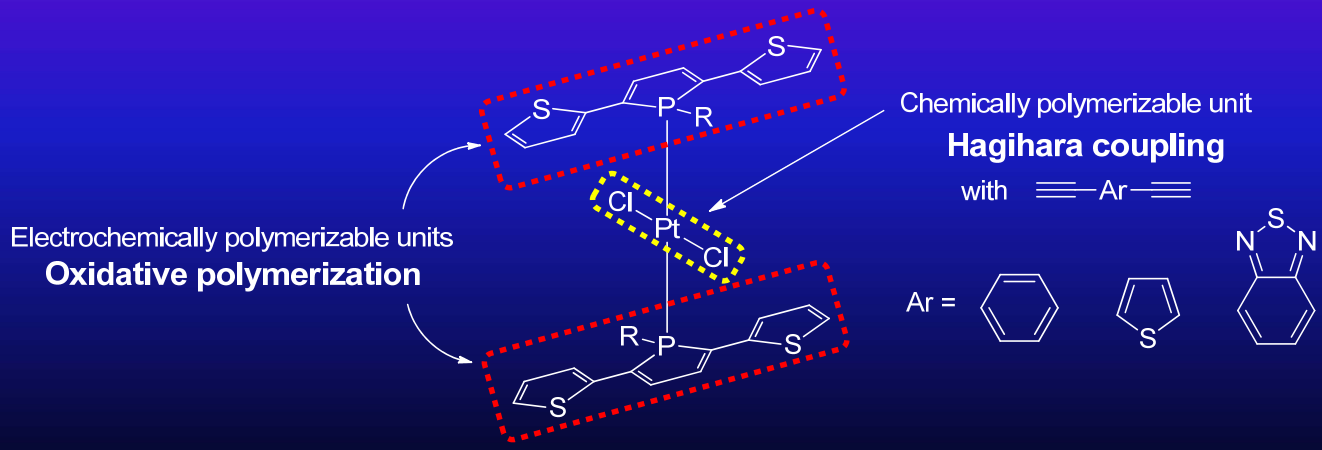
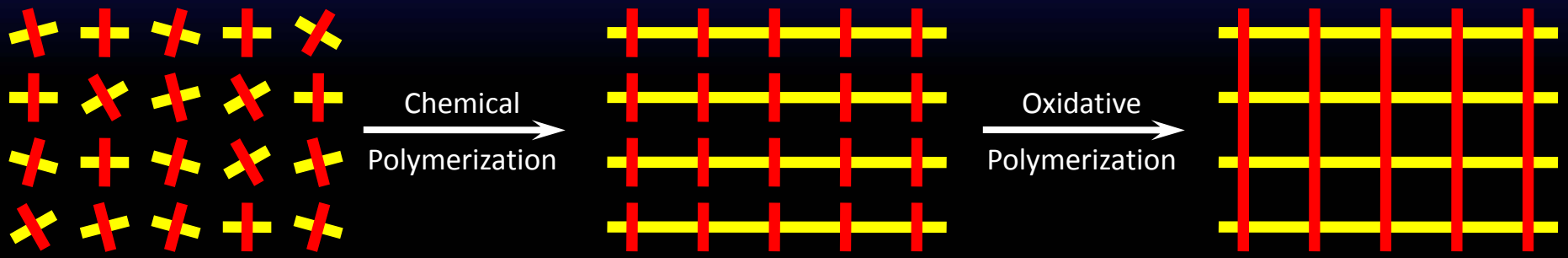
Controlling Morphology and Electronic Properties of Two-Dimensional Organometallic Conjugated Polymers via Orthogonal Polymerization Methods: Phosphole-Based Systems Serving Dual Roles as Oxidatively Polymerizable Units and Ligating Units for Metal Complexes





Monomers

Pt-Acetylide Polymer
1D Molecular Wire

Cross Linked Polymer
2D Matrix

Non planar structure allows phosphole based compounds to serve two unique roles. They can be incorporated into Pt-Acetylide type conjugated polymers in place of tryalkyl phosphine ligands. Since phosphole based compounds can also be oxidatively polymerized, Pt-Acetylide polymer can be cross linked by polyphosphole upon oxidation using electrochemical methods. Since both polymers are conjugated, enhanced conductivity is expected.