Progress Toward a Propeller-Shaped Oligophenyl Lactone with Reversible Geometry Switching

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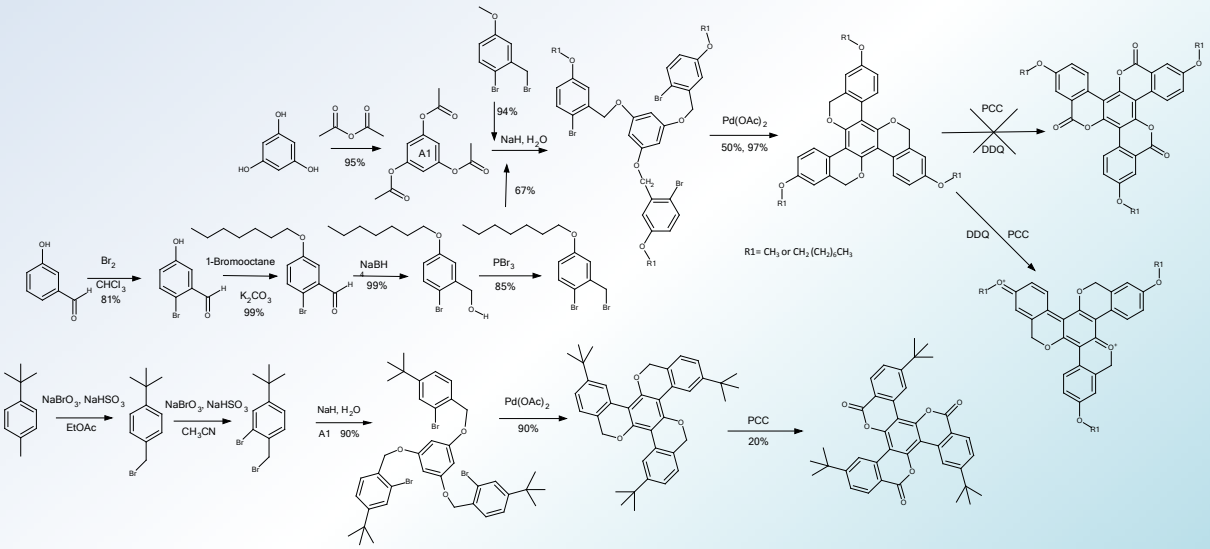
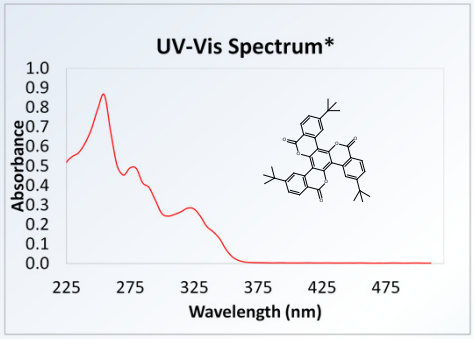
Introduction

Planar conjugated organic molecules have unique spectroscopic and electronic properties. We are interested in molecules containing the 6H-benzo[c]chromen-6-one subunit because they should be both planar and conjugated, but should also readily switch their geometries in varying pH environments. We describe the progress toward a new organic-soluble propeller-shaped oligophenyl trilactone with C3h symmetry. While planar under acidic conditions, the three lactone side rings are capable of opening under alkaline pH yielding two possible axial diastereomers containing three benzoate anions. The symmetric diastereomer should be preconfigured with the anionic benzoate groups on the same side of the central phenyl ring, and thus should be an excellent metal cation binding agent.

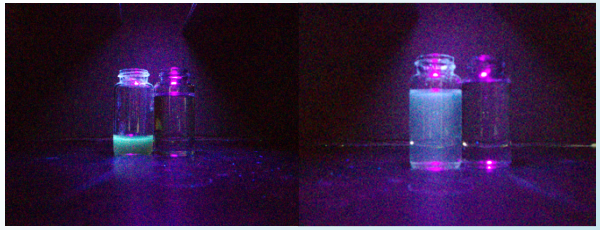


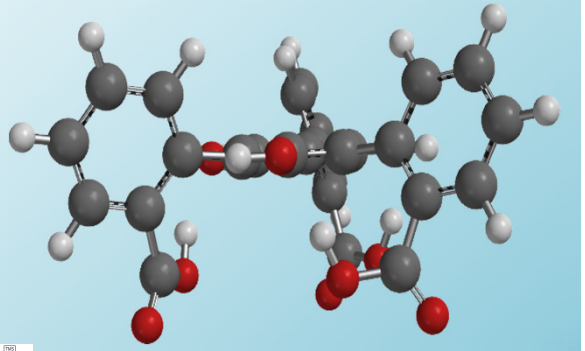
Absorbance (nm)	Extinction Coefficient $M^{-1}cm^{-1*}$
254	82241
274	46526
325	26699

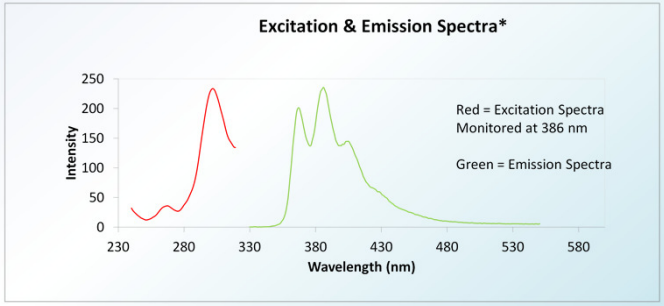


Product in toluene on left
Pure toluene on right

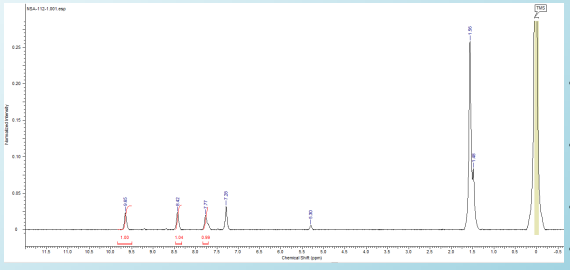
Product in CH_2Cl_2 on left
Pure CH_2Cl_2 on right







* Spectra taken in CH_2Cl_2



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