

# SYNTHESIS OF POLY(SILYLETHER)S FROM FURAN-BASED SUBSTRATES AND HYDROSILANES CATALYZED BY A SALEN MANGANESE COMPLEX

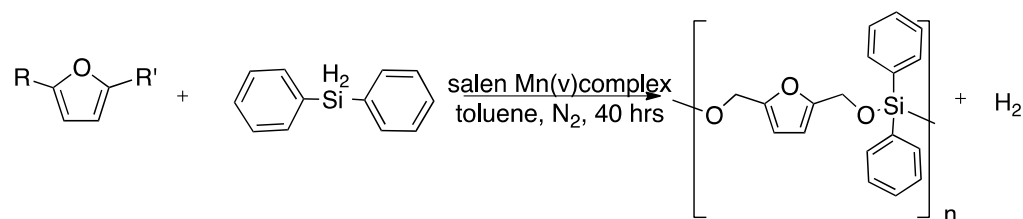
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## Objectives:

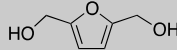
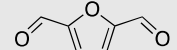
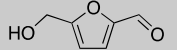
1. Synthesize poly(silylether)s in a way that is more environmentally friendly and less expensive than current methods.
2. Test the ability of our catalyst system to react with substrates with various functional groups

## Research Project:

To synthesize poly(silylether)s in a more environmentally friendly manner, we chose to use furan-based substrates, hydrosilanes, and a salen manganese nitrido complex to catalyze the reaction. The substrates used are derived from biomass which leads to the environmental benefits of the synthesis. Each reaction was run under inert conditions at reflux temperature. First, we found that diphenylsilane leads to the polymer of highest molecular weight. Then, we took this silane,  $\text{Ph}_2\text{SiH}_2$ , and combined it with the catalyst complex and both diol and dicarbonyl furan-based substrates. After these reactions were run, we found that the catalyst complex is able to react with both diols, through dehydrogenative coupling, and dicarbonyls, through hydrosilylation. Future studies could apply the catalyst complex to other biomass derived substrates, specifically lignin, as well as further research into the properties of the synthesized poly(silylether) itself.



Sarah Streed purifying the polymer

No.	Substrate	Yield (%)	$M_n$	PDI
1		54.7	5700	1.737
2		63.0	3300	1.349
3		50.3	3800	2.26