

Public Abstract

First Name:Nicole

Middle Name:Naomi

Last Name:Crenshaw

Adviser's First Name:Silvia

Adviser's Last Name:Jurisson

Co-Adviser's First Name:

Co-Adviser's Last Name:

Graduation Term:SP 2015

Department:Chemistry

Degree:MS

Title:Characterization of Acyclic Rhodium
Tetrathioether Ligand Systems for $^{105}\text{Rh(III)}$

Rhodium-105 is a 36 hr half-life beta emitter potentially useful for radiotherapy. Previously, the reaction of ^{105}Rh -chloride with a linear tetrathioether ligand resulted in several species. Evaluation of this reaction at the macroscopic level showed that multiple isomers formed depending on the reaction conditions. Radiotracer syntheses for use in potential radiopharmaceuticals require formation of a single species. Various reaction conditions were examined at the macroscopic level to drive the reaction to a single species, evaluating the effects of reducing agent, solvent, temperature, salt concentration, HCl concentration, pH, and reaction time. Product distributions were evaluated by LC-MS, NMR, IR, and x-ray crystallography.