

Abstract**COMPOSITIONS, METHODS, AND SYSTEMS FOR THE SYNTHESIS AND
USE OF IMAGING AGENTS**

The present invention provides compounds with imaging moieties for imaging a subject. The present invention also relates to systems, compositions, and methods for the synthesis and use of imaging agents, or precursors thereof. An imaging agent precursor may be converted to an imaging agent using the methods described herein. In some cases, a composition or plurality of imaging agents is enriched in ^{18}F . In some cases, an imaging agent may be used to image an area of interest in a subject, including, but not limited to, the heart, cardiovascular system, cardiac vessels, brain, and other organs.

Figure 15