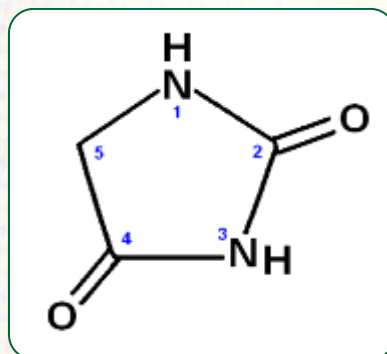




## Direct Synthesis of Hydantoin

Hydantoin and its chemical derivatives are biologically important compounds of relevance to the chemists, biologists and pharmaceutical researchers. These compounds have been utilized for purposes as diverse as disinfectants, biocide agents and anticonvulsants and are known to inhibit DNA polymerases and thereby disrupt the PCR process.

Researchers in the Chemistry Department of Colorado State University have developed a direct route to the synthesis of hydantoin and several of derivatives thereof. Using a relatively simple catalyst and a key nitrogen-donor compound, a variety of methyl arylacetates and  $\beta,\gamma$ -unsaturated methyl esters can be effectively  $\alpha$ -aminated under mild reaction conditions via C-H activation. The current  $\alpha$ -amination process provides direct access to several hydantoin which are present in various biologically active compounds. In particular, a variety of substitutions at the 5 position and on both nitrogens are currently possible.



Further studies on the reaction mechanism, exploration of different catalysts and nitrogen sources, and expansion of the substrate scope as well as development of asymmetric process are currently underway.

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### Features and Benefits

- Direct synthesis of hydantoin and related Compounds
- Variety of derivatives possible
- Mild conditions and simple catalyst system

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