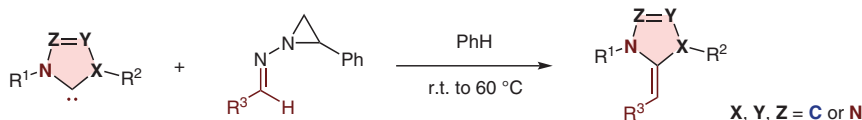


N. M. RAJENDRAN, Q. LU, J. BOUFFARD* (EWHA WOMANS UNIVERSITY, SEOUL, REPUBLIC OF KOREA)

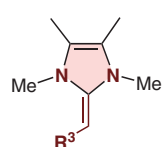
A Facile Preparation of N-Heterocyclic Olefins: RingOpening Polymerization of β -Butyrolactone and Frustrated Lewis Pair Reactivity

Chem. Eur. J. 2024, 30, e202303358 DOI: 10.1002/chem.202303358.

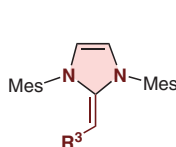
N-Heterocyclic Olefins with Applications to ROP



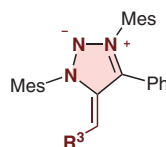
Selected examples:



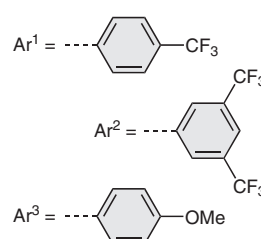
$\text{R}^3 = \text{Ar}^1$, 89% yield
 Ar^2 , 80% yield
 Ar^3 , 82% yield



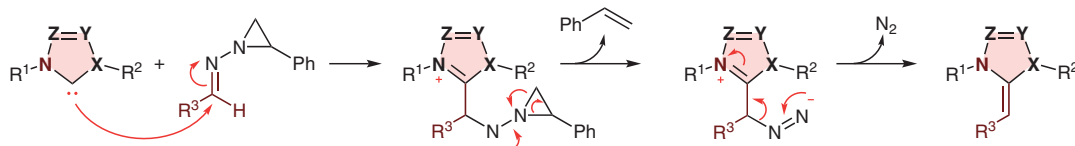
$\text{R}^3 = \text{Ar}^1$, 80% yield
 Ar^2 , 85% yield
 Ar^3 , 62% yield



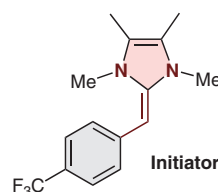
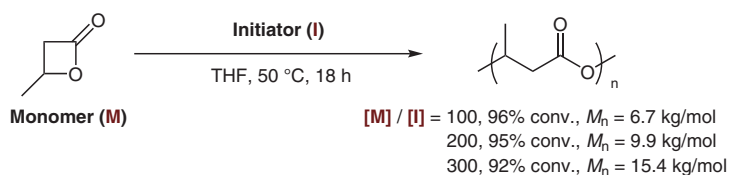
$\text{R}^3 = \text{Ar}^1$, 89% yield
 Ar^2 , 82% yield
 Ar^3 , 78% yield



Proposed mechanism:



ROP of β -butyrolactone:



Significance: N-Heterocyclic olefins (NHO), also known as ene-1,1-diamines, are promising initiators and catalysts in ring-opening polymerizations (ROP) for producing biodegradable materials. However, difficulties with their preparation and isolation have limited their applications. Here, a convenient synthetic method is developed for NHOs from N-heterocarbenes and N-aziridinylimines.

Comment: A series of NHOs with diverse structures are prepared via a simple modular approach, which circumvents over-alkylation and in most cases complex purification procedures. The application as a Brønsted base initiator in ROP of β -butyrolactone is also demonstrated.