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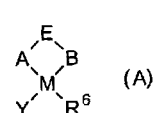
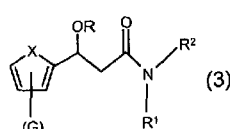
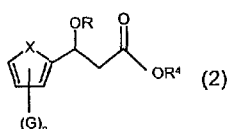
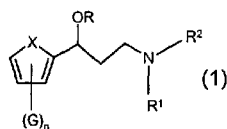
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(54) Title: PROCESSES FOR THE PREPARATION OF HETEROCYCLIC HYDROXYAMINES AND INTERMEDIATES AND CATALYSTS FOR USE THEREIN



(57) Abstract: A process for the preparation of a compound of Formula (1): Formula (1) wherein: X is S, O or NR³, wherein R³ is H or an organic group; R is H or an organic group; R¹ and R² each independently are H, optionally substituted alkyl or optionally substituted aryl; G is a substituent; and n is 0 to 3: which comprises the steps: (a) reacting a compound of Formula (2) with a compound of Formula NHR¹R² to give a compound of Formula (3): Formula (2) Formula (3) wherein X, R, G and n are as defined above and R⁴ is optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl, optionally substituted heteroaryl or a combination thereof; and (b) reducing the compound of Formula (3) to give a compound of Formula (1) is provided. Processes for the preparation of a compounds of Formula (2), novel compounds of Formula (3) and certain preferred catalysts of formula: Formula (A) wherein: R⁶ represents a neutral optionally substituted hydrocarbyl, a neutral optionally substituted perhalogenated hydrocarbyl, or an optionally substituted cyclopentadienyl ligand; A represents an optionally substituted nitrogen; B represents an optionally substituted nitrogen, oxygen, sulphur or phosphorous; E represents a linking group; M represents a metal capable of catalysing transfer hydrogenation; and Y represents an anionic group, a basic ligand or a vacant site; provided that at least one of A or B comprises a substituted nitrogen and the substituent has at least one chiral centre; and provided that when Y is not a vacant site that at least one of A or B carries a hydrogen atom, are also provided.