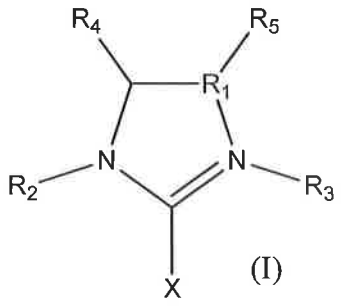
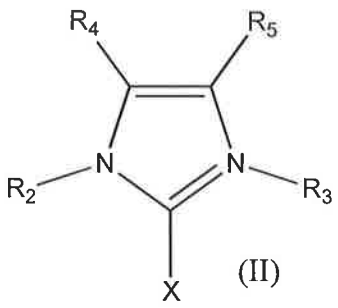
Claims

1. A method for initiating a polymerization of laurolactam, ~~characterized in that~~wherein the laurolactam-comprising monomer mixture or monomer solution is admixed with a protected N-heterocyclic carbene, which has a pKa of at least 24 as determined in anhydrous DMSO, and the polymerization is commenced by the raising of the temperature to an onset temperature, which is at least 60°C and in the case of a bulk polymerization is above the melting temperature of the monomer mixture~~.~~; and

2. ~~The method as claimed in claim 1, characterized in that~~wherein the protected N-heterocyclic carbene is a compound having one of the two formulae (I) or (II)



(I)

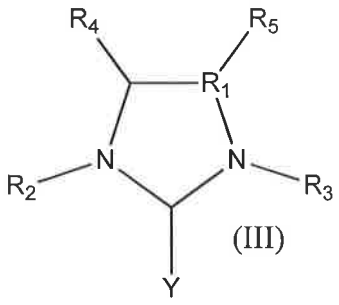


(II)

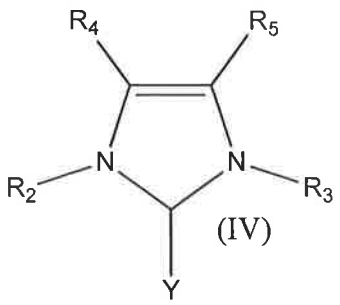
where

R_1 is a CH_2, C_2H_4, C_3H_6 or a corresponding substituted radical, R_2 and R_3, identically or in each case differently with respect to one another, are a cyclic, branched or linear alkyl radical having 1 to 20 carbon atoms and optionally containing heteroatoms, or are a substituted or unsubstituted aromatic radical, R_4 and R_5, identically or in each case differently relative to one another, are hydrogen, a cyclic, branched or linear alkyl radical having 1 to 20 carbon atoms and optionally containing heteroatoms, or are a substituted or unsubstituted aromatic radical, and X is CO_2, ZnX'_2, BiX'_3, SnX'_2 or MgX'_2, where X' is a halogen or a pseudohalogen.

3~~2~~. The method as claimed in claim 1, ~~characterized in that~~wherein the protected N-heterocyclic carbene is a compound having one of the two formulae (III) or (IV)



(III)



(IV)

where

R_1 is a CH_2, C_2H_4, C_3H_6 or a corresponding substituted radical, R_2 and R_3, identically or in each case differently with respect to one another, are a cyclic, branched or linear alkyl radical having 1 to 20 carbon atoms and optionally containing heteroatoms, or are a substituted or unsubstituted aromatic radical, R_4 and R_5, identically or in each case differently relative to one another, are hydrogen, a cyclic, branched or linear alkyl radical having 1 to 20 carbon atoms and optionally containing heteroatoms, or are a substituted or unsubstituted aromatic radical, and Y is a CF_3, ~~C_6F_4,~~ C_6F_5, CCl_3, or OR_4 radical, with R_4 as an alkyl radical having 1 to 10 carbon atoms, ZnX'_2, BiX'_3, SnX'_2 or MgX'_2, where X' is a halogen or a pseudohalogen.

43. The method as claimed in at least one of claims 1 to ~~3~~2, ~~characterized in that~~wherein the polymer obtained from the method has a weight-average molecular weight, in a GPC measurement against a polystyrene standard, of between 5000 and 50,000 g/mol.

54. The method as claimed in at least one of claims 1 to 43, ~~characterized in that~~wherein the polymerization is a bulk polymerization and in that the onset temperature is between 150°C and 220°C.

65. The method as claimed in at least one of claims 1 to ~~5~~4, ~~characterized in that~~wherein the protected N-heterocyclic carbenes have a pKa of between 25 and 30.

76. The method as claimed in at least one of claims 1 to ~~6~~5, ~~characterized in that~~wherein the protected N-heterocyclic carbenes are six-membered N-heterocycles of the formula (I) with $R_1 = C_2H_4$.

87. The method as claimed in at least one of claims 1 to ~~7~~6, ~~characterized in that~~wherein the monomer mixture or monomer solution comprises not only laurolactam but also ε-caprolactone and/or one or more lactones.

~~9~~8. The method as claimed in at least one of claims 1 to ~~8~~7, ~~characterized in that~~wherein prior to the polymerization a carrier material in fibre form is impregnated with a composition comprising laurolactam, optional comonomers and protected N-heterocyclic carbenes and then the temperature is raised to the onset temperature.

~~10~~9.The method as claimed in at least one of claims 1 to ~~8~~7, ~~characterized in that~~wherein a composition comprising laurolactam, optional comonomers and protected N-heterocyclic carbenes is poured or injected into a mould and the polymerization is initiated in this mould by an increase in temperature to the onset temperature.

~~11. A composite material characterized in that it is producible by means of a method as claimed in claim 9.~~

~~12. A moulding characterized in that it is producible by means of a method as claimed in claim 10.~~