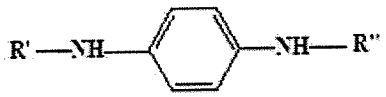
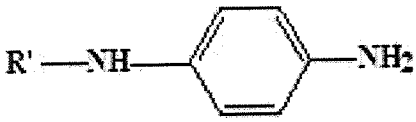
Claims:

1. A preparation method for an aryl substituted p-phenylenediamine substance, a structural formula of the aryl substituted p-phenylenediamine substance being as follows:



Where R" is phenyl or o-methylphenyl, and R' is phenyl or o-methylphenyl; and

the preparation method comprises: reacting a raw material A with a raw material B in the presence of a hydrogen acceptor and a catalyst to form the aryl substituted p-phenylenediamine substance, the raw material A having a structure shown as Formula I, the raw material B being cyclohexanone and/or o-methylcyclohexanone and the hydrogen acceptor being phenol and/or o-cresol which can accept hydrogen for conversion into the raw material B,



Formula I,

wherein a molar ratio of the raw material A and the raw material B is 20:1~5:1 and a molar ratio of the raw material A and the hydrogen acceptor is 1:10~1:2.5.

2. The preparation method as claimed in claim 1, wherein the aryl substituted p-phenylenediamine is a mixture of N,N'-diphenyl p-phenylenediamine, N-phenyl-N'-methylphenyl p-phenylenediamine, and N,N'-di(methylphenyl) p-phenylenediamine, and the preparation method comprises the following steps:

taking N-phenyl p-phenylenediamine as the raw material A, taking the cyclohexanone and/or the o-methylcyclohexanone as the raw material B, taking the phenol as the hydrogen acceptor, and performing reaction in the presence of the catalyst to obtain a first component;

taking the N-phenyl p-phenylenediamine as the raw material A, taking the cyclohexanone and/or the o-methylcyclohexanone as the raw material B, taking the o-cresol as the hydrogen acceptor, and performing reaction in the presence of the catalyst to obtain a second component, or, taking N-o-methylphenyl p-phenylenediamine as the raw material A, taking the cyclohexanone and/or the o-methylcyclohexanone as the raw material B, taking the phenol as the hydrogen

acceptor, and performing reaction in the presence of the catalyst to obtain a second component;

taking the N-o-methylphenyl p-phenylenediamine as the raw material A, taking the cyclohexanone and/or the o-methylcyclohexanone as the raw material B, taking the o-cresol as the hydrogen acceptor, and performing reaction in the presence of the catalyst to obtain a third component; and

mixing the first component, the second component and the third component to obtain the mixture of N,N'-diphenyl p-phenylenediamine, N-phenyl-N'-methylphenyl p-phenylenediamine, and N,N'-di(methylphenyl) p-phenylenediamine.

3. The preparation method as claimed in claim 1 or 2, wherein the aryl substituted p-phenylenediamine is a mixture of N,N'-diphenyl p-phenylenediamine, N-phenyl-N'-methylphenyl p-phenylenediamine, and N,N'-di(methylphenyl) p-phenylenediamine, and the preparation method comprises the following steps:

taking a mixture of the N-phenyl p-phenylenediamine and the N-o-methylphenyl p-phenylenediamine as the raw material A, taking the cyclohexanone and/or the o-methylcyclohexanone as the raw material B, taking a mixture of the phenol and the o-cresol as the hydrogen acceptor, and performing reaction in the presence of the catalyst to obtain the mixture of N,N'-diphenyl p-phenylenediamine, N-phenyl-N'-methylphenyl p-phenylenediamine, and N,N'-di(methylphenyl) p-phenylenediamine.

4. The preparation method as claimed in any one of claims 1-3, wherein the catalyst is a supported noble metal catalyst, and is preferably the catalyst is a Pd-C and/or Pt-C supported noble metal catalyst.

5. The preparation method as claimed in claim 4, wherein a using amount of the catalyst is 0.1~2% of a weight of the raw material A.

6. The preparation method as claimed in any one of claims 1-3, wherein the raw material A and the raw material B are reacted for reaction time of 6~8h under a temperature condition of 220~280℃.

7. The preparation method as claimed in claim 6, wherein after reaction of the raw material A and the raw material B in the presence of the hydrogen acceptor and the catalyst is finished, the preparation method further comprising: filtering reaction liquid obtained by the reaction to obtain filtrate, and performing reduced-pressure distillation on the filtrate to obtain the aryl substituted p-phenylenediamine substance.

8. The preparation method as claimed in claim 6, wherein the raw material A, the

raw material B are reacted in a nitrogen atmosphere.