on October 10, 2008, pp. 204-205.

Non-patent Document 2: Chemical Engineering Journal, vol. 154, issue 1-3, pp. 396-400 (2009).

Non-patent Document 3: Chemistry A ~~Europian~~ European Journal, vol. 17, issue 44, pp. 12452-12457 (2011).

SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0008]

As described above, several techniques for producing p-xylene as a raw material for terephthalic acid using a substance derived from a biomass resource have been disclosed. However, in any of these methods, the yield of p-xylene is low, and a large number of steps are required, which are problematic.

[0009]

In the production method disclosed in Non-patent Document 2, the weight yield of the mixture of p-xylene and meta-xylene is up to 6.21%, which corresponds to 10.8% in terms of the molar yield. Thus, the yield of p-xylene is extremely low.

[0010]

In the production method disclosed in Patent Document 2, a large-scale equipment and heavy economic burden are required since the chemical conversion process proceeds in as long as 3 steps. Further, in the step of chemical conversion from isobutanol in this method, the weight yield of p-xylene is 18.7%, which corresponds to 26.1% in terms of the molar yield. Thus, the yield is low.

[0011]

The production method disclosed in Non-patent Document 3 has many problems. For example, the chemical conversion process proceeds in as long as 4 steps; the oxidation step requires a large amount of harmful hydrogen peroxide, and also requires a solvent; and the decarboxylation step requires an expensive solvent.

catalyst that may be preferably used include metals or metal oxides such as copper, chromium oxide, copper oxide, iron oxide, palladium and platinum; and catalysts containing any of these metals or metal oxides (e.g., catalysts in which any of these simple metals or metal oxides is supported by a carrier).

[0037]

The carrier that carries the catalyst used in the aromatization step is a substance that retains a substance having a catalytic activity (e.g., the ~~metal carriers~~ simple metals and metal oxides described above) in a dispersed state on its surface, and specific examples of the carrier include alumina, silica-alumina, silica, zeolite, titania, magnesia, zirconia, diatomaceous earth and carbon.

[0038]

The catalyst used in the aromatization step in the present invention is preferably a catalyst in which the metal(s) and/or metal oxide(s) described above is/are supported by the carrier described above. More specifically, the catalyst is more preferably a catalyst comprising the above-described carrier that carries at least one metal or metal oxide selected from the group consisting of platinum, nickel, palladium, ruthenium, platinum oxide, copper oxide, iron oxide and chromium oxide.

[0039]

Preferred examples of the combination of the metal or metal oxide and the carrier in the catalyst used in the aromatization step in the present invention include platinum on alumina, platinum on silica-alumina, platinum on silica, platinum on carbon, nickel on carbon, nickel on alumina, nickel on silica-alumina, nickel on silica, palladium on alumina, palladium on carbon, palladium on silica-alumina, palladium on silica, ruthenium on alumina, ruthenium on silica-alumina, ruthenium on silica, ruthenium on carbon, chromium oxide on alumina, chromium oxide on silica-alumina and chromium oxide on silica. Chromium oxide on alumina, chromium oxide on silica-alumina and chromium oxide on silica are especially