## CLAIMS

The invention claimed is:

1. A catalyst for catalytic reforming of naphtha, comprising:

A) a noble metal comprising one or more of platinum, palladium, rhodium, ruthenium, osmium, and iridium;

B) a lanthanide-series metal comprising one or more elements of atomic numbers 57-71 of the periodic table; and

C) a support; wherein an average bulk density of the catalyst is about 0.300-about 0.620 gram per cubic centimeter, an atomic ratio of the lanthanide-series metal:noble metal is less than about 1.3:1, and the lanthanide-series metal is distributed at a concentration of the lanthanide-series metal in a micron surface layer of the catalyst greater than one times but less than or equal to 1.75 times a concentration of the lanthanide-series metal at a central core of the catalyst.

2. The catalyst according to claim 1, wherein the lanthanide-series metal comprises cerium and an atomic ratio of cerium:noble metal is about 0.50:1.00-about 1.29:1.00.

3. The catalyst according to claim 1, wherein the lanthanide-series metal comprises cerium and an atomic ratio of cerium:noble metal is about 0.94:1.00-about 1.26:1.00.

4. The catalyst according to claim 1, wherein the lanthanide-series metal comprises cerium and an atomic ratio of cerium:noble metal is about 1.00:1.00-about 1.26:1.00.

5. The catalyst according to claim 1, wherein the lanthanide-series metal comprises cerium and the noble metal comprises platinum.

6. The catalyst according to claim 5, wherein an atomic ratio of cerium:platinum is about 0.94:1.00-about 1.29:1.00.

7. The catalyst according to claim 5, wherein an atomic ratio of cerium:platinum is about 0.94:1.00-about 1.26:1.00.

8. The catalyst according to claim 5, wherein an atomic ratio of cerium:platinum is about 1.00:1.00-about 1.26:1.00.

9. The catalyst according to claim 1, wherein the average bulk density of the catalyst is about 0.555-about 0.580 gram per cubic centimeter.

10. The catalyst according to claim 1, wherein the catalyst further comprises a group 14 metal of the periodic table.

11. The catalyst according to claim 1, further comprises tin.

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1. A catalyst for catalytic reforming of naphtha, comprising:

A) a noble metal comprising one or more of platinum, palladium, rhodium, ruthenium, osmium, and iridium;

B) a lanthanide-series metal comprising one or more elements of atomic numbers 57-71 of the periodic table; and

C) a support; wherein an average bulk density of the catalyst is about 0.300-about 0.620 gram per cubic centimeter, an atomic ratio of the lanthanide-series metal:noble metal is less than about 1.3:1, and the lanthanide-series metal is distributed at a concentration of the lanthanide-series metal in a micron surface layer of the catalyst greater than one times but less than or equal to 1.75 times a concentration of the lanthanide-series metal at a central core of the catalyst.

2. The catalyst according to claim 1, wherein the lanthanide-series metal comprises cerium and an atomic ratio of cerium:noble metal is about 0.50:1.00-about 1.29:1.00.

3. The catalyst according to claim 1, wherein the lanthanide-series metal comprises cerium and an atomic ratio of cerium:noble metal is about 0.94:1.00-about 1.26:1.00.

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5. The catalyst according to claim 1, wherein the lanthanide-series metal comprises cerium and the noble metal comprises platinum.

6. The catalyst according to claim 5, wherein an atomic ratio of cerium:platinum is about 0.94:1.00-about 1.29:1.00.

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9. The catalyst according to claim 1, wherein the average bulk density of the catalyst is about 0.555-about 0.580 gram per cubic centimeter.

10. The catalyst according to claim 1, wherein the catalyst further comprises a group 14 metal of the periodic table.

11. The catalyst according to claim 1, further comprises tin.