C L A I M S

1. ZSM-5 crystals wherein the ratio of the average SAR at the edge of each crystallite to the average SAR at the centre of the crystallite is at least 1.15, as determined via SEM/EDX or TEM/EDX elemental analysis.

2. ZSM-5 crystals as claimed in claim 1, wherein the ratio of the average SAR at the edge of each crystallite to the average SAR at the centre of the crystallite is at least 1.25.

3. ZSM-5 crystals as claimed in claim 1, wherein the ratio is at most 3, preferably at most 2.

4. ZSM-5 crystals as claimed in claim 1, wherein the slope of a second order polynomial fitted to the SAR values between the two edge SAR maxima, expressed as $-y'_0$, is at least 2, preferably at least 3.

5. ZSM-5 crystals as claimed in claim 1, wherein the slope of a second order polynomial fitted to the SAR values between the two edge SAR maxima, expressed as $-y'_0$, is at most 6, preferably at most 4.

6. Process for the preparation of ZSM-5 crystals as claimed in claim 1, which comprises synthesizing the crystals by crystallization at a temperature in the range of from 150 to 200 °C during of from 5 to 36 hours from an aqueous reaction mixture comprising an alumina source, a silica source, an alkali source, and L-tartaric acid, or a water-soluble salt thereof.

7. Process for selecting ZSM-5 crystals having a high selectivity for ethylbenzene dealkylation, which comprises subjecting the ZSM-5 crystals to SEM/EDX or TEM/EDX elemental analysis, calculating the SAR across the crystals and selecting those crystals which exhibit a

U- or dish-shaped narrow slit line scan profile on a graph of SAR across the crystallite from edge to edge, wherein the ratio of the average SAR at the edge of each crystallite to the average SAR at the centre of the crystallite is at least 1.15, as determined via SEM/EDX or TEM/EDX elemental analysis.

8. Process as claimed in claim 7, wherein the ratio of the average SAR at the edge of each crystallite to the average SAR at the centre of the crystallite is greater than 1.15.

9. Process as claimed in claim 7, wherein the ratio is at most 3.

10. Process as claimed in claim 7, wherein the slope of a second order polynomial fitted to the SAR values between the two edge SAR maxima, expressed as $-y'_0$, is at least 2, preferably at least 3.

11. Process as claimed in claim 7, wherein the slope of a second order polynomial fitted to the SAR values between the two edge SAR maxima, expressed as $-y'_0$, is at most 6, preferably at most 4.

12. Catalyst composition which comprises ZSM-5 crystals as claimed in claim 1, or as prepared by a process as claimed in claim 6, or as selected by a process as claimed in claim 7.

13. Catalyst composition as claimed in claim 12, which also contains a silica binder in an amount in the range of from 30 to 80wt%, based on the total of ZSM-5 and silica.

14. Catalyst composition as claimed in claim 12 or claim 13, which also contains a hydrogenation metal selected from platinum, tin, lead, silver, copper, and nickel.

15. Catalyst composition as claimed in any one of claims 12 to 14, which also contains a second ZSM-5 component,

which ZSM-5 has a particle diameter size of less than 1 micron.

16. Catalyst composition as claimed in claim 15, wherein the total amount of ZSM-5 present is in the range of from 30 to 35 wt%, and the second ZSM-5 component is present in an amount in the range of from 5 to 10 wt%, all basis total carrier.

17. Catalyst composition as claimed in any one of claims 12 to 16, which has been subjected to a dealumination treatment with ammonium hexafluorosilicate.

18. Ethylbenzene dealkylation process which comprises contacting, in the presence of hydrogen, a feedstock which comprises ethylbenzene with a catalyst composition as claimed in any one of claims 12 to 17.

C L A I M S

1. ZSM-5 crystals wherein the ratio of the average SAR at the edge of each crystallite to the average SAR at the centre of the crystallite is at least 1.15, as determined via SEM/EDX or TEM/EDX elemental analysis.

2. ZSM-5 crystals as claimed in claim 1, wherein the ratio of the average SAR at the edge of each crystallite to the average SAR at the centre of the crystallite is at least 1.25.

3. ZSM-5 crystals as claimed in claim 1, wherein the ratio is at most 3, preferably at most 2.

4. ZSM-5 crystals as claimed in claim 1, wherein the slope of a second order polynomial fitted to the SAR values between the two edge SAR maxima, expressed as $-y'_0$, is at least 2, preferably at least 3.

5. ZSM-5 crystals as claimed in claim 1, wherein the slope of a second order polynomial fitted to the SAR values between the two edge SAR maxima, expressed as $-y'_0$, is at most 6, preferably at most 4.

6. Process for the preparation of ZSM-5 crystals as claimed in claim 1, which comprises synthesizing the crystals by crystallization at a temperature in the range of from 150 to 200 °C during of from 5 to 36 hours from an aqueous reaction mixture comprising an alumina source, a silica source, an alkali source, and L-tartaric acid, or a water-soluble salt thereof.

7. Process for selecting ZSM-5 crystals having a high selectivity for ethylbenzene dealkylation, which comprises subjecting the ZSM-5 crystals to SEM/EDX or TEM/EDX elemental analysis, calculating the SAR across the crystals and selecting those crystals which exhibit a

U- or dish-shaped narrow slit line scan profile on a graph of SAR across the crystallite from edge to edge, wherein the ratio of the average SAR at the edge of each crystallite to the average SAR at the centre of the crystallite is at least 1.15, as determined via SEM/EDX or TEM/EDX elemental analysis.

8. Process as claimed in claim 7, wherein the ratio is at most 3.

9. Process as claimed in claim 7, wherein the slope of a second order polynomial fitted to the SAR values between the two edge SAR maxima, expressed as $-y'_0$, is at least 2, preferably at least 3.

10. Process as claimed in claim 7, wherein the slope of a second order polynomial fitted to the SAR values between the two edge SAR maxima, expressed as $-y'_0$, is at most 6, preferably at most 4.

11. Catalyst composition which comprises ZSM-5 crystals as claimed in claim 1, or as prepared by a process as claimed in claim 6, or as selected by a process as claimed in claim 7.

12. Catalyst composition as claimed in claim 11, which also contains a silica binder in an amount in the range of from 30 to 80wt%, based on the total of ZSM-5 and silica.

13. Catalyst composition as claimed in claim 11 or claim 12, which also contains a hydrogenation metal selected from platinum, tin, lead, silver, copper, and nickel.

14. Catalyst composition as claimed in any one of claims 11 to 13, which also contains a second ZSM-5 component, which ZSM-5 has a particle diameter size of less than 1 micron.

15. Catalyst composition as claimed in claim 14, wherein the total amount of ZSM-5 present is in the range of from

30 to 35 wt%, and the second ZSM-5 component is present in an amount in the range of from 5 to 10 wt%, all basis total carrier.

16. Catalyst composition as claimed in any one of claims 11 to 15, which has been subjected to a dealumination treatment with ammonium hexafluorosilicate.

17. Ethylbenzene dealkylation process which comprises contacting, in the presence of hydrogen, a feedstock which comprises ethylbenzene with a catalyst composition as claimed in any one of claims 11 to 16.