

CLAIMS:

1. A heterogeneous catalyst comprising a support and gold, wherein: (i) said support comprises titanium, (ii) said catalyst comprises from 0.1 to 5 wt% of gold, (iii) at least 90 wt% of the gold is in the outer 60% of catalyst volume, and (iv) particles of the catalyst have an average diameter from 200 microns to 30 mm; wherein weight percentages are based on weight of the catalyst.
2. The catalyst of claim 1 in which particles of the catalyst have an average diameter from 300 microns to 20 mm.
3. The catalyst of claim 2 in which at least 95 wt% of the gold is in the outer 50% of catalyst volume.
4. A heterogeneous catalyst comprising a support and gold, wherein: (i) said support comprises silica and 0.1 to 90 wt% titanium, (ii) said catalyst comprises from 0.1 to 5 wt% of gold, and (iii) particles of the catalyst have an average diameter from 200 microns to 30 mm; wherein weight percentages are based on weight of the catalyst.
5. The catalyst of claim 4 in which at least 90 wt% of the gold is in the outer 60% of catalyst volume.
6. The catalyst of claim 5 in particles of the catalyst have an average diameter from 300 microns to 20 mm.
7. A method for preparing methyl methacrylate from methacrolein and methanol; said method comprising contacting a mixture comprising methacrolein, methanol and oxygen with a catalyst bed comprising a heterogeneous catalyst comprising a support and gold, wherein: (i) said support comprises titanium, (ii) said catalyst comprises from 0.1 to 5 wt% of gold, and (iii) particles of the catalyst have an average diameter from 200 microns to 30 mm; wherein weight percentages are based on weight of the catalyst.
8. The method of claim 7 in which particles of the catalyst have an average diameter from 300 microns to 20 mm and in which at least 95 wt% of the gold is in the outer 50% of catalyst volume.
9. A method for preparing methyl methacrylate from methacrolein and methanol; said method comprising contacting a mixture comprising methacrolein, methanol and oxygen with a catalyst bed comprising a heterogeneous catalyst comprising a support and gold, wherein: (i) said support comprises silica and 0.1 to 90 wt% titanium, (ii) said catalyst comprises from 0.1 to 5 wt% of gold, and (iii) particles of the catalyst have an average diameter from 200 microns to 30 mm; wherein weight percentages are based on weight of the catalyst.

10. The method of claim 9 in which at least 90 wt% of the gold is in the outer 60% of catalyst volume and in which particles of the catalyst have an average diameter from 300 microns to 20 mm.