Claims:

1. A plurality of polymeric particles embedded with alkaline-earth metal oxide comprising:

gas-filled polymeric microelements, the gas-filled polymeric microelements having a shell and a density of 5 g/liter to 200 g/liter, the shell having an outer surface and a diameter of 5 μm to 200 μm and the outer surface of the shell of the gas-filled polymeric particles having alkaline-earth metal oxide-containing particles embedded in the polymer, the alkaline-earth metal oxide-containing particles having an average particle size of 0.01 to 3 μm; the alkaline-earth metal oxide-containing particles distributed within each of the polymeric microelements, the alkaline-earth metal oxide-containing regions being spaced to coat less than 50 percent of the outer surface of the polymeric microelements; and less than 0.1 weight percent total of the polymeric microelements being associated with i) alkaline-earth metal oxide-containing particles having a particle size of greater than 5 μm; ii) alkaline-earth metal oxide-containing regions covering greater than 50 percent of the outer surface of the polymeric microelements; and iii) polymeric microelements agglomerated with alkaline-earth metal oxide-containing particles to an average cluster size of greater than 120 μm.

2. The plurality of polymeric particles of claim 1 wherein the gas-filled polymeric microelements are a copolymer of polyacrylonitrile and methacrylonitrile filled with isopentane.

3. The plurality of polymeric particles of claim 1 wherein the gas-filled polymeric microelements have an average size of 5 to 200 microns.

4. The plurality of polymeric particles of claim 1 wherein the alkaline-earth metal oxide-containing particles cover 1 to 40 percent of the outer surface of the shell of the gas-filled polymeric microelements.

5. A plurality of polymeric particles embedded with alkaline-earth metal oxide comprising:

gas-filled polymeric microelements, the gas-filled polymeric microelements having a shell and a density of 10 g/liter to 100 g/liter, the shell having an outer surface and a diameter of 5 μm to 200 μm and the outer surface of the shell of the gas-filled polymeric particles having alkaline-earth metal oxide-containing particles embedded in the polymer, the alkaline-earth metal oxide-containing particles having an average particle size of 0.01 to 2 μm; the alkaline-earth metal oxide-containing particles distributed within each of the polymeric microelements, the alkaline-earth metal oxide-containing regions being spaced to coat 1 to 40 percent of the outer surface of the polymeric microelements; and less than 0.1 weight percent total of the polymeric microelements being associated with i) alkaline-earth metal oxide-containing particles having a particle size of greater than 5 μm; ii) alkaline-earth metal oxide-containing regions covering greater than 50 percent of the outer surface of the polymeric microelements; and iii) polymeric microelements agglomerated with alkaline-earth metal oxide-containing particles to an average cluster size of greater than 120 μm.

6. The plurality of polymeric particles of claim 5 wherein the gas-filled polymeric microelements are a copolymer of polyacrylonitrile and methacrylonitrile filled with isopentane.

7. The plurality of polymeric particles of claim 5 wherein the gas-filled polymeric microelements have an average size of 10 to 100 microns.

8. The plurality of polymeric particles of claim 5 wherein the alkaline-earth metal oxide-containing particles cover 2 to 30 percent of the outer surface of the shell of the gas-filled polymeric microelements.

The invention claimed is:

1. A plurality of polymeric particles embedded with alkaline-earth metal oxide comprising: gas-filled polymeric microelements, the gas-filled polymeric microelements having a shell and a density of 5 g/liter to 200 g/liter, the shell having an outer surface and a diameter of 5 μm to 200 μm and the outer surface of the shell of the gas-filled polymeric particles having alkaline-earth metal oxide-containing particles embedded in the polymer, the alkaline-earth metal oxide-containing particles having an average particle size of 0.01 to 3 μm ; the alkaline-earth metal oxide-containing particles distributed within each of the polymeric microelements, the alkaline-earth metal oxide-containing regions being spaced to coat less than 50 percent of the outer surface of the polymeric microelements; and less than 0.1 weight percent total of the polymeric microelements being associated with i) alkaline-earth metal oxide-containing particles having a particle size of greater than 5 μm ; ii) alkaline-earth metal oxide-containing regions covering greater than 50 percent of the outer surface of the polymeric microelements; and iii) polymeric microelements agglomerated with alkaline-earth metal oxide-containing particles to an average cluster size of greater than 120 μm.

2. The plurality of polymeric particles of claim 1 wherein the gas-filled polymeric microelements are a copolymer of polyacrylonitrile and methacrylonitrile filled with isopentane.

3. The plurality of polymeric particles of claim 1 wherein the gas-filled polymeric microelements have an average size of 5 to 200 microns.

4. The plurality of polymeric particles of claim 1 wherein the alkaline-earth metal oxide-containing particles cover 1 to 40 percent of the outer surface of the shell of the gas-filled polymeric microelements.

5. A plurality of polymeric particles embedded with alkaline-earth metal oxide comprising: gas-filled polymeric microelements, the gas-filled polymeric microelements having a shell and a density of 10 g/liter to 100 g/liter, the shell having an outer surface and a diameter of 5 μm to 200 μm and the outer surface of the shell of the gas-filled polymeric particles having alkaline-earth metal oxide-containing particles embedded in the polymer, the alkaline-earth metal oxide-containing particles having an average particle size of 0.01 to 2 μm ; the alkaline-earth metal oxide-containing particles distributed within each of the polymeric microelements, the alkaline-earth metal oxide-containing regions being spaced to coat 1 to 40 percent of the outer surface of the polymeric microelements; and less than 0.1 weight percent total of the polymeric microelements being associated with i) alkaline-earth metal oxide-containing particles having a particle size of greater than 5 μm ; ii) alkaline-earth metal oxide-containing regions covering greater than 50 percent of the outer surface of the polymeric microelements; and iii) polymeric microelements agglomerated with alkaline-earth metal oxide-containing particles to an average cluster size of greater than 120 μm.

6. The plurality of polymeric particles of claim 5 wherein the gas-filled polymeric microelements are a copolymer of polyacrylonitrile and methacrylonitrile filled with isopentane.

7. The plurality of polymeric particles of claim 5 wherein the gas-filled polymeric microelements have an average size of 10 to 100 microns.

8. The plurality of polymeric particles of claim 5 wherein the alkaline-earth metal oxide-containing particles cover 2 to 30 percent of the outer surface of the shell of the gas-filled polymeric microelements.