Claims

1. An apparatus (100) for collecting one or more anesthetic gases in a gas stream (102) derived from exhalation air from a patient and captured by a mask arrangement

(104), wherein the apparatus (100) comprises

a chamber (106) comprising an inlet (108) connectable to a mask arrangement (104) for capturing a gas stream (102) derived from exhalation air from a patient,

wherein the chamber (106) is configured to receive the gas stream (102) via the inlet (108),

wherein the chamber (106) houses one or more adsorption units (112a-c) comprising one or more reversible adsorbents (114) for adsorption of one or more anesthetic gases, and

wherein the reversible adsorbent (114) comprises one or more molecular sieves (116) impregnated with a metal-containing compound.

2. An apparatus (100) according to claim 1, wherein the molecular sieve (116) is

impregnated with one or more of the group of:

• an iron-containing compound;

• a zinc-containing compound; and

• an iron- and zinc-containing compound.

3. An apparatus (100) according to claim 1 or 2, wherein the one or more

molecular sieves (116) comprises/comprise molecular sieve beads (118) having one

or more coating layers (120) comprising or consisting of a metal-containing compound.

4. An apparatus (100) according to any one of the claims 1 to 3, wherein the one

or more molecular sieves (116) comprises/comprise molecular sieve beads (118)

having one or more coating layers (120) comprising or consisting of one or more of the

group of:

• an iron-containing compound;

• a zinc-containing compound; and

• an iron- and zinc-containing compound.

5. An apparatus (100) according to claim 3 or 4, wherein the coating layer (120)

comprises or consists of one or more of the group of:

• a crystallized iron-containing metal oxide;
• a crystallized zinc-containing metal oxide; and
• a crystallized iron- and zinc-containing metal oxide.

6. An apparatus (100) according to any one of the claims 1 to 5, wherein the adsorption unit (112a) comprises one or more beds (124) comprising the one or more molecular sieves (116).

7. An apparatus (100) according to any one of the claims 1 to 6, wherein the chamber (106) comprises an outlet (126) for guiding gas processed in the chamber (106) away from the chamber (106).

8. An apparatus (100) according to any one of the claims 1 to 7, wherein the chamber (106) comprises an outlet (126) for guiding desorbing gas from the reversible adsorbent (114) away from the chamber (106).

9. An apparatus (100) according to any one of the claims 1 to 8, wherein the apparatus (100) is configured for the collection of nitrous oxide and/or a mixture of nitrous oxide and one or more other anaesthetic gases in a gas stream (102) derived from exhalation air from a patient and captured by the mask arrangement (104), and wherein the one or more reversible adsorbents (114) is/are configured to adsorb nitrous oxide.

10. A method (200) for collecting one or more anesthetic gases in a gas stream (102) derived from exhalation air from a patient and captured by a mask arrangement (104), wherein the method (200) comprises:

receiving (201) the gas stream (102) in an adsorbent-containing chamber (106) comprising an inlet (108) connected to the mask arrangement (104) so as to adsorb one or more anesthetic gases by way of the adsorbent (114) contained in the adsorbent-containing chamber (106), wherein the adsorbent (114) is reversible and comprises one or more molecular sieves (116) impregnated with a metal-containing compound.

11. A method (200) according to claim 10, wherein the method (200) comprises:

guiding (202) gas processed in the adsorbent-containing chamber (106) away from the adsorbent-containing chamber (106).

12. A method (200) according to claim 10 or 11, wherein the method (200) comprises:

guiding (204) desorbing gas from the adsorbent (114) away from the adsorbent-containing chamber (106).

13. A method (200) according to any one of the claims 10 to 12, wherein the method (200) comprises:

receiving (201) the gas stream (102) in an adsorbent-containing chamber (106) comprising an inlet (108) connected to the mask arrangement (104) so as to adsorb nitrous oxide by way of the adsorbent (114) contained in the adsorbentcontaining chamber (106).

14. A method (200) according to any one of the claims 10 to 13, wherein the method (200) comprises:

controlling (203) the temperature of the adsorbent (114) to a temperature in the range of 30˚C to 80˚C so as to desorb desorbing gas from the adsorbent (114).