Claims

1. An electrically operated aerosol-generating system for receiving an aerosol-forming substrate, the system comprising:

one or more electric aerosol-generating elements;

one or more hybrid capacitors for supplying power to the one or more electric aerosol-generating elements; and

a voltage source for supplying power to the one or more hybrid capacitors to charge the one or more hybrid capacitors.

2. The electrically operated aerosol-generating system according to claim 1, wherein the system comprises:

an aerosol-generating device, comprising:

the one or more electric aerosol-generating elements; and

the one or more hybrid capacitors; and

a charging device, comprising:

the voltage source.

3. The electrically operated aerosol-generating system according to claim 2, wherein:

the charging device further comprises electric circuitry configured to control the supply of power from the voltage source to the one or more hybrid capacitors; and

the aerosol-generating device further comprises electric circuitry configured to control the supply of power from the one or more hybrid capacitors to the one or more electric aerosol-generating elements.

4. The electrically operated aerosol-generating system according to claim 3, wherein:

the electric circuitry of the charging device is configured to supply power from the voltage source to the one or more hybrid capacitors during a charging mode; and

the electric circuitry of the aerosol-generating device is configured to supply power from the one or more hybrid capacitors to the one or more aerosol-generating elements during a heating mode.

5. The electrically operated aerosol-generating system according to claim 4, wherein the electric circuitry of the charging device is configured to supply power from the voltage source to the one or more hybrid capacitors at a constant current until the voltage reaches a predetermined value during the charging mode.

6. The electrically operated aerosol-generating system according to claim 4, wherein the electric circuitry of the charging device is configured to supply power from the voltage source to the one or more hybrid capacitors at a constant current until the voltage reaches a predetermined value and to subsequently supply power from the voltage source to the one or more hybrid capacitors at a constant voltage at least until the current reaches a predetermined value during the charging mode.

7. The electrically operated aerosol-generating system according to claims 4, 5 or 6, wherein the electric circuitry of the aerosol-generating device is configured to supply power from the one or more hybrid capacitors to the one or more aerosol-generating elements in pulses of a given duration during the heating mode.

8. The electrically operated aerosol-generating system according to claim 7, wherein the electric circuitry of the aerosol-generating device is configured to adjust the supply of power to the one or more aerosol-generating elements by pulse frequency modulation or by pulse width modulation.

9. The electrically operated aerosol-generating system according to claims 7 or 8, wherein the electric circuitry of the aerosol-generating device is configured to adjust the power supplied to the one or more aerosol-generating elements from a high power to a low power in two or more stages over the duration of a puff.

10. The electrically operated aerosol-generating system according to any one of claims 4 to 9, wherein the aerosol-generating device and the charging device are electrically connected to one another during the charging mode and electrically disconnected from one another during the heating mode.

11. The electrically operated aerosol-generating system according to any preceding claim, wherein the one or more hybrid capacitors are lithium ion capacitors.

12. An electrically operated aerosol-generating device for an electrically operated aerosol-generating system according to any one of claims 2 to 11, the device comprising:

a housing having a cavity for receiving an aerosol-generating article comprising an aerosol-forming substrate;

one or more electric aerosol-generating elements arranged at or around the cavity;

and

one or more hybrid capacitors for supplying power to the one or more electric aerosol-generating elements.

13. The electrically operated aerosol-generating device according to claim 12, wherein the device further comprises electric circuitry configured to:

control the supply of power from the one or more hybrid capacitors to the one or more electric aerosol-generating elements, the one or more hybrid capacitors being discharged through the one or more aerosol-generating elements in a heating mode.

14. A method of charging an aerosol-generating device comprising a hybrid capacitor power supply comprising one or more hybrid capacitors, the method comprising:

comparing an output voltage of the one or more hybrid capacitors with a threshold voltage;

when the output voltage from the one or more hybrid capacitors is equal to or greater than the threshold voltage, charging the one or more hybrid capacitors using a constant charging current, and reducing the charging current when either the charging voltage applied to the one or more hybrid capacitors reaches a predetermined maximum permitted voltage or the output voltage from the one or more hybrid capacitors is less than the threshold voltage; and

when the charging voltage applied to the one or more hybrid capacitors reaches a maximum permitted voltage or the output voltage from the one or more hybrid capacitors is less than the threshold voltage, reducing the charging current to maintain the charging voltage applied to the one or more hybrid capacitors at or close to the maximum permitted voltage.