

AEROSOL-GENERATING SUBSTRATE CARRIER AND METHOD OF MANUFACTURE OF SAME

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The application claims the benefit of priority of Singapore Patent Application No. 10202403834Y, filed on 6 December 2024, the content of it being hereby incorporated by reference in its entirety for all purposes.

TECHNICAL FIELD

[0002] The disclosure relates to an aerosol-generating substrate carrier, a method of manufacture and use thereof.

BACKGROUND

[0003] The following discussion of the background is intended to facilitate an understanding of the present disclosure only. It should be appreciated that the discussion is not an acknowledgment or admission that any of the material referred to was published, known, or is part of the common general knowledge of the person skilled in the art in any jurisdiction as of the priority date of the disclosure.

[0004] Inductively heated aerosol-generating devices or systems typically rely on embedded susceptors to inductively transfer heat to the aerosol-forming substrate(s). These systems or devices typically offer a more uniform heat distribution compared to other heating mechanism like external heating, or providing a more enhanced flavor profile. However, such embedded susceptors are either typically single use, or may be integrated to an aerosol-generating device, which may be restrictive in terms of profile and flavor.

[0005] There exists a need to reduce wastage associated with the single use embedded susceptor, and/or simultaneously improve flexibility associated with an aerosol-generating device.

SUMMARY

[0006] A technical solution comprising an aerosol-generating substrate carrier integrated with a susceptor heating element, is disclosed. It is contemplated in such an arrangement that

the susceptor heating element is neither embedded directly within the aerosol-forming substrate, nor in the device.

[0007] The present disclosure relates to an aerosol-generating substrate carrier incorporating a susceptor. In some embodiments, the susceptor may be an inductive heating element. The susceptor is integrated within the carrier and is configured to be inductively heated by an external electromagnetic field generated by a coil or similar device component. The susceptor may comprise ferromagnetic, paramagnetic, or other magnetically responsive materials optimized for efficient thermal transfer to the substrate.

[0008] In some embodiments, when the carrier is positioned within an aerosol-generating device, the susceptor is arranged or positioned to penetrate the substrate through a longitudinal axis of the substrate, thereby facilitating uniform heating of the substrate and improving aerosol formation. Such an arrangement may also facilitate a consistent user experience. In some embodiments, the carrier allows for modular customization, enabling users to select or replace filters and substrates according to preference. Such an arrangement reduces material waste by minimizing disposable components and by incorporating a retractable or reusable susceptor within the carrier.

[0009] According to an aspect of the present disclosure, there is provided an aerosol-generating substrate carrier for use with an aerosol-generating device, the aerosol-generating substrate carrier comprising a substrate holder shaped and dimensioned to receive one or more aerosol-generating substrate; a carrier body connected to the substrate holder, the carrier body configured to embed or house a susceptor, the carrier body comprising a guiding mechanism to slidably move the substrate holder towards and away from the carrier body; wherein the susceptor comprises a material with a predefined Curie temperature; and wherein the aerosol-generating substrate carrier is configured to be removably attached to the aerosol-generating device.

[0010] In some embodiments, the carrier body comprises a biasing mechanism, the biasing mechanism configured to urge the carrier body away from the substrate holder.

[0011] In some embodiments, the predefined Curie temperature is in a range of 200°C to 600°C.

[0012] In some embodiments, the carrier body and/or the holder comprises a polymer, a metal or a mixed multi-layered structure of the polymer and the metal. Optionally, the polymer

has a melting point above 200°C. Optionally, the polymer comprises polyether ether ketone (PEEK) or polyetherimide (PEI).

[0013] In some embodiments, the susceptor comprises at least one of a paramagnetic, ferromagnetic and/or ferrimagnetic material. Optionally, the susceptor comprises 5% to 90% of a ferromagnetic or paramagnetic material, and/or the susceptor optionally comprises at least one of the following: stainless steel, nickel, permalloy, mu-metal, aluminium, iron, copper, bronze, cobalt, graphite, molybdenum, silicon carbide, niobium, Inconel alloy, iron-nickel-copper-chromium soft magnetic alloy, non-conductive ferrimagnetic ceramics and/or an iron, chromium, and aluminium (FeCrAl) alloy.

[0014] In some embodiments, the carrier body and/or the holder is of a cylindrical shape.

[0015] In some embodiments, the substrate holder has a curved surface having a diameter in a range of 2 mm to 20 mm, and a length in a range of 2 mm to 50 mm.

[0016] In some embodiments, the carrier body comprises a housing and an interfacing portion, the housing comprising a greater diameter relative to the interfacing portion and the substrate holder. The interfacing portion comprises the guiding mechanism for interfacing with the substrate holder.

[0017] In some embodiments, the interfacing portion comprises a curved flap to form an enclosure with a slot of the substrate holder.

[0018] According to another aspect of the present disclosure there is provided an aerosol-generating device comprising: an aerosol-generating substrate carrier, the aerosol-generating substrate carrier comprising: a substrate holder, the substrate holder shaped and dimensioned to receive one or more aerosol-generating substrate; a carrier body connected to the substrate holder, the carrier body configured to embed or house a susceptor, the carrier body comprising a guiding mechanism to facilitate sliding motion of the substrate holder towards and away from the carrier body; wherein the susceptor comprises a material with a predefined Curie temperature; and wherein the aerosol-generating substrate carrier is removably attached to the aerosol-generating device; an electromagnetic coil, the electromagnetic coil configured to induce an electrical current through the susceptor.

[0019] In some embodiments, the electromagnetic coil comprises a helical, planar or multi-coil configuration.

[0020] In some embodiments, the electromagnetic coil is configured to operate at a frequency between 0.1 MHz and 30 MHz.

[0021] According to another aspect of the present disclosure there is provided a method for manufacturing an aerosol-generating substrate carrier, the method comprising: providing a substrate holder, the substrate holder shaped and dimensioned to receive one or more aerosol-generating substrate; providing a carrier body; providing a susceptor, embedding or attaching the susceptor to the carrier body; slidably connecting the substrate holder with the carrier body using a guiding mechanism; configuring the susceptor with a predefined Curie temperature; and configuring the aerosol-generating substrate carrier to be removably attached to an aerosol-generating device.

[0022] In some embodiments, the method further comprises providing one or more biasing mechanism, and configuring the biasing mechanism to urge the carrier body away from the substrate holder.

[0023] According to another aspect of the present disclosure there is provided a kit of parts, the kit comprising the aerosol-generating substrate carrier; the aerosol-generating device; one or more aerosol-generating substrates; and one or more filters.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] The disclosure will be better understood with reference to the detailed description when considered in conjunction with the non-limiting examples and the accompanying drawings, in which:

- FIGS. 1A to 1C illustrate perspective side views of an aerosol-generating substrate carrier suitable for interface with an aerosol-generating device according to various embodiments of the present disclosure.
- FIG. 2A and FIG. 2B are cross-sectional views of the aerosol-generating substrate carrier suitable for interface with an aerosol-generating device according to various embodiments of the present disclosure.
- FIG. 3 is an exploded view of the aerosol-generated substrate carrier according to various embodiments of the present disclosure.
- FIG. 4A and FIG. 4B are cross-sectional views of another aerosol-generating substrate carrier suitable for interface with an aerosol-generating device according to various embodiments of the present disclosure.

- FIG. 5 illustrates the susceptor and substrate being surrounded by inductive coils in an aerosol-generating device (full device not shown) to generate heat using the susceptor through inductive heating.
- FIG. 6 is a flow chart illustrating a method for manufacturing an aerosol-generating substrate carrier according to some embodiments of the present disclosure.
- FIG. 7 is a flow chart of a method for using the aerosol-generating substrate carrier according to some embodiments.

DETAILED DESCRIPTION

[0025] The following detailed description refers to the accompanying drawings that show, by way of illustration, specific details and embodiments in which the disclosure may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the disclosure. Other embodiments may be utilized and structural, logical changes may be made without departing from the scope of the disclosure. The various embodiments are not necessarily mutually exclusive, as some embodiments can be combined with one or more other embodiments to form new embodiments.

[0026] Embodiments described in the context of one of the systems or methods are analogously valid for the other systems or methods.

[0027] Features that are described in the context of an embodiment may correspondingly be applicable to the same or similar features in the other embodiments. Features that are described in the context of an embodiment may correspondingly be applicable to the other embodiments, even if not explicitly described in these other embodiments. Furthermore, additions and/or combinations and/or alternatives as described for a feature in the context of an embodiment may correspondingly be applicable to the same or similar feature in the other embodiments.

[0028] In the context of some embodiments, the articles “a”, “an” and “the” as used with regard to a feature or element include a reference to one or more of the features or elements.

[0029] As used herein, the term “and/or” includes any and all combinations of one or more of the associated listed items.

[0030] As used herein, the term “at least substantially” may include “exactly” and a reasonable variance.

[0031] As used herein, the term “about” or “approximately” as applied to a numeric value encompasses the exact value and a reasonable variance.

[0032] As used herein, the term “device” may be understood to refer to any apparatus, equipment, or component, whether standalone or integrated, that performs a specific function or set of functions. This includes, but is not limited to, mechanical, electrical, electronic, optical, or electromechanical systems, subsystems, and assemblies. A device may comprise one or more components, modules, or units that are designed to interact with each other to achieve a particular purpose.

[0033] As used herein, the term “aerosol generated substrate” (also referred to as aerosol-forming substrate) can be broadly defined as any material or composite structure that, when subjected to energy input, for example, heat, electrical, chemical, or mechanical, produces an inhalable or dispersible aerosol comprising volatile compounds, particulates, or vapors. In some embodiments, the energy input may be provided by inductive heating. The substrate may be organic, inorganic, or composite in nature, and may be engineered in various physical forms (e.g., rods, films, powders, porous matrices) to achieve controlled aerosol generation for consumer, medical, industrial, or environmental applications.

[0034] As used herein, the term “susceptor” broadly includes any material or component designed to absorb electromagnetic, radiative, or inductive energy and convert it into heat, thereby enabling or enhancing aerosol generation, heating, or chemical transformation of an adjacent substrate. Susceptors may be metallic, ceramic, carbon-based, or composite in nature, and may be formed as films, foils, meshes, powders, or coatings. In inductive heating systems, susceptors are typically conductive or ferromagnetic materials that couple with an induction field to generate localized heat.

[0035] As used herein, the term “carrier” broadly refers to a physical device, component, or structure configured to hold, support, or position an aerosol-generating substrate within a system. The carrier may provide mechanical stability, alignment, and controlled interaction between the substrate and energy sources (such as resistive, radiative, or inductive heating elements). Carriers may be formed from metals, ceramics, polymers, or composites, and may include features such as housings, sleeves, capsules, cartridges, or chambers designed to facilitate insertion, removal, or replacement of the substrate. In some embodiments involving inductive heating systems, the carrier may interface with one or more induction heating units by holding and aligning the aerosol-generating substrate and the susceptor within the electromagnetic field of the induction coil. The carrier ensures mechanical stability, thermal

coupling, and airflow management, and may itself incorporate susceptors or conductive elements to optimize inductive heating efficiency.

[0036] As used herein, the term “configured to” broadly refers to the design, arrangement, or adaptation of a system, device, component, or module to perform a specific function or achieve a particular outcome. The term includes both hardware and software implementations wherein in a hardware implementation, the physical components are arranged, programmed, or structured to carry out the intended function(s), and in the context of programming and software, a device is operable under executable instructions (e.g., software, firmware) to perform the specified function(s) when executed by one or more processors. The resultant configuration allows the system or component to perform the stated function, either inherently or after suitable programming or activation, without requiring substantial modifications to its structure or operational logic.

[0037] As used herein, the term “slidably connected” broadly refers to two or more components that are joined in such a way that one component can move relative to the other along a defined path or axis, while remaining mechanically engaged or guided. The sliding connection permits linear or curvilinear displacement without requiring disengagement of the parts, and may be achieved by direct contact surfaces, guiding structures, or intermediate elements.

[0038] In the following, embodiments will be described in detail.

[0039] According to an aspect of the present disclosure there is provided an aerosol-generating substrate carrier for use with an aerosol-generating device.

[0040] FIG. 1A, FIG. 1B, FIG. 1C each shows a perspective side view of an aerosol-generating substrate carrier 10.

[0041] FIG. 1A shows the aerosol-generating substrate carrier 10 in an extended configuration or open state comprising a substrate holder 14 having a slot 18 for receiving an aerosol-generating substrate 13.

[0042] FIG. 1B shows the aerosol-generating substrate carrier 10, still in the open state, comprising aerosol-generating substrate 13 inserted or positioned into the substrate holder 14.

[0043] FIG. 1C illustrates the aerosol-generating substrate carrier 10 in a retracted state wherein the aerosol-generating substrate 13 engages a susceptor 25 (shown in FIG. 2A and FIG. 2B) for heating.

[0044] The aerosol-generating substrate carrier 10 may be suited for use, for example, with an aerosol-generating device (not shown) that generates aerosol via different means, such as via inductive based heating. When inserted into an aerosol-generating device, the susceptor 25 is arranged or configured to produce heat energy by an element of the aerosol-generating device. In some embodiments, the element may be an electromagnetic coil configured to induce a current to pass through the susceptor, and thereby produces heat. The aerosol-generating substrate carrier may be removably attached to the aerosol-generating device via an insertion mechanism, or a sliding mechanism. In such manner, the aerosol-generating substrate carrier 10 may function like a jig to guide the substrate 13 into the aerosol-generating device for heating of the substrate 13 to generate aerosol for use.

[0045] Put in another way, the susceptor 25 may be arranged in inductive connection (e.g. via coupling) to one or more coils for providing inductive heating thereto.

[0046] The aerosol-generating substrate carrier 10 comprises a carrier body 11 connected to the substrate holder 14, the carrier body 11 configured to embed or house a susceptor 25, the carrier body 11 comprising a mechanism to slidably move the susceptor 25 towards and away from the substrate holder 14. The susceptor 25 may comprises a material, or may be formed from or of a material, with a predefined Curie temperature.

[0047] In some embodiments, the aerosol-generating substrate carrier 10 may be configured to securely hold the aerosol-generating substrate 13 and to cooperate with the inductive heating susceptor for uniform heating. The slot 18 may be configured or dimensioned such as to enable an elastic deformation of the slot 18 when the aerosol-generating substrate 13 is inserted, facilitating a snap-fit mechanism.

[0048] The carrier body 11 may include a housing portion 22 and an interfacing portion 33. The housing 22 may have a greater diameter relative to the interfacing portion 33 and the substrate holder 14. The carrier body 11 and the substrate holder 14 may be connected and attached via a slide-in mechanism.

[0049] The aerosol-generating substrate carrier 10 may comprise an O-ring seal 12 positioned near the interface between the carrier body 11 and the substrate holder 14. In some embodiments, the O-ring seal 12 may be an annular elastomeric sealing element positioned to prevent leakage of aerosol or air during operation. The O-ring seal 12 may be formed from or of rubber or rubber-like materials. It is contemplated that any other material, for example silicone, suitable for performing functions of air-tightness may be contemplated.

[0050] The substrate holder 14 comprises the slot 18 formed via a recessed cavity or channel designed to receive and retain the aerosol-generating substrate 13. In some embodiments, insertion of the aerosol-generating substrate 13 may involve an alignment with the longitudinal axis of the holder. Optional chamfered or tapered edges at the slot entrance may be formed to facilitate insertion by guiding the substrate into the correct position.

[0051] In some embodiments, an aerosol-generating substrate 13 may be advanced axially into the substrate holder 14 until it reaches a defined stop surface. The stop surface may facilitate repeatable positioning and minimizes or prevents over-insertion.

[0052] FIG. 2A and FIG. 2B are side cross-sectional views of the aerosol-generating substrate carrier 10 with the internal components illustrated. As may be appreciable, FIG. 2A shows the enclosed configuration corresponding to FIG. 1C in the retracted state or closed state, and FIG. 2B shows the open configuration corresponding to FIG. 1B in the open state.

[0053] The housing 22 is cylindrically shaped and encloses the susceptor 25 and the aerosol-generating substrate 13 when in the retracted state. The housing 22 provides structural support and thermal containment. In other words, the housing 22 may be regarded as a component housing internal elements, including a biasing mechanism 23.

[0054] The susceptor 25 may be affixed at one end to an internal wall or surface of the housing 22, and may have an elongate shape with a sharp edge to facilitate piercing or puncturing the substrate 13.

[0055] The interfacing portion 33 may be dimensioned to slidably receive the substrate holder 14. In some embodiments, the susceptor 25 may comprise a base portion for attachment to the housing 22.

[0056] The biasing mechanism 23 may comprise one or more biasing elements, such as one or more springs, to facilitate the movement of the carrier 10 between an open (extended) state and a close (retracted) state. The biasing mechanism 23 may be positioned axially within the housing 22, exerting a biasing force to push the carrier body 11 and the substrate holder 14 apart. This separation creates the open state, exposing the substrate holder 14 for substrate insertion.

[0057] In other words, the biasing mechanism 23 may be designed so that its natural expansion force acts outwardly. In some embodiments, the one or more springs may be one or more compression springs, wherein the coils expand axially, pushing the substrate holder 14

away from the housing 22. Although not shown, other configurations of biasing mechanism 23 may be contemplated, for example, the use of one or more torsion springs.

[0058] When a compressive force is applied to move the substrate holder 14 towards the housing 22, the carrier 10 is actuated into the closed state, and the one or more springs may be compressed. The substrate 13 contacts the susceptor 25 and as force is further applied to move the substrate holder 14 towards the housing 22, the susceptor 25 punctures the substrate 13. The substrate holder 14 may be held in place in the closed state due to the contact force between the punctured substrate 13 and the susceptor 25. In some embodiments, additional locking mechanism comprising interlocking mechanisms (e.g. grooves and flanges/protrusions) may be contemplated.

[0059] In the closed state, mechanical energy is stored. Once the external force is removed, the biasing mechanism 23 releases this energy, automatically returning the carrier 10 to the open state. Such an arrangement facilitates repeatability and ease of substrate replacement.

[0060] In summary, in the closed state as shown in FIG. 2A, the one or more springs are compressed, allowing the susceptor 25 to puncture the one or more substrates 13. In FIG. 2B, the one or more springs are extended, urging the substrate holder 14 away from the housing 22 and the susceptor 25, leaving the slot 18 accessible. In the closed state, the substrate 13 is in its operational position within the carrier 10, and covered (non-exposed to environment) to enable uniform heating.

[0061] The carrier 10 may comprise airflow openings 21, 27. The airflow openings 21, 27 may be one or more inlet ports and one or more outlet ports located at opposing ends of the carrier 10, enabling ambient air to flow through and deliver aerosol, generated by the substrate, to a user. In the embodiment shown in FIG. 2A and FIG. 2B, the airflow openings 21, 27 are positioned along the longitudinal axis of the susceptor 25. The opening 21 may be positioned at an end of the housing 22, and the opening 27 may be positioned an end of the substrate holder 14 such as to form an air flow path.

[0062] FIG. 3 shows an exploded view of another embodiment of a aerosol-generating substrate carrier 30 comprising various components, wherein like numerals reference like parts. In the embodiment shown in FIG. 3, the carrier body 11 comprises a circular housing 22 and an interfacing portion 33. The aerosol-generating substrate carrier 30 further comprises a biasing mechanism in the form of a spring 34. The susceptor 25 may comprise a elongate needle portion 35 and an interfacing portion 36. The aerosol-generating substrate carrier 30 may

further comprise a filter holder 39 for holding a filter 38. The filter 38 may be used to reduce the inhalation of non-desired substances from the generation of aerosol from the substrate 13, and/or change the air flow and adjust/mitigate pressure drop. The filter holder 39 may be attached to the housing 22 via attachment means such as screws or other suitable fasteners. One or more air ports may be formed on the filter holder 39 to facilitate the flow of filtered air.

[0063] The interfacing portion 33 may comprise a fastening mechanism at one end to be attached to the housing 22. At the other end, the interfacing portion 33 may comprise a curved flap to form an enclosure with the slot 18, covering the substrate 13 when the carrier 10 is in a closed position.

[0064] In some embodiments, the aerosol-generating substrate 13 may comprise material configured to release aerosol upon heating, and may possibly comprise tobacco, herbal blends, or synthetic matrices.

[0065] In some embodiments, the aerosol-generating substrate carrier 10, 30 may be formed from or of a material suitable for multiple reuse, such as polymeric, metal material or a mixed multi-layered structure of both. In some embodiments, the aerosol-generating substrate carrier 10, 30 may be formed from or of temperature-resistant polymers such as polyether ether ketone (PEEK), polyetherimide (PEI), or other polymers having a melting point of at least 200 °C. In another embodiment, the carrier 10, 30 may comprise metallic, ceramic, composite, or multi-layered structures, optionally produced by additive manufacturing.

[0066] In some embodiments, the susceptor 25 may comprise a ferromagnetic or paramagnetic material with a predefined Curie temperature; wherein the susceptor 25 may be heated by an external inductive coil to generate aerosol from the substrate;

[0067] In some embodiments, the slot for the aerosol-generating substrate 13 may be in the form of a rod; and a slot in mechanism to optionally insert the filter 38 next to an air inhalation orifice.

[0068] In some embodiments, the susceptor 25 may be made of a material selected from the group consisting of Mu-metal, permalloy, stainless steel (grade 430), aluminum, iron, nickel, copper, bronze, cobalt, graphite, molybdenum, silicon carbide, niobium, Inconel alloys, Pytherm 230 and 260, Kanthal, non-conductive ferrimagnetic ceramics. Suitable susceptor materials may contain more than 5%, 20%, 50%, or 90% of ferromagnetic or paramagnetic materials. The susceptor 25 may be retractable and embedded within the substrate carrier 10.

The susceptor 25 may have a Curie temperature between 200°C and 600°C, or in a range of 200°C to 600°C (end point inclusive).

[0069] FIG. 4A and FIG. 4B are side cross-sectional views of another embodiment of an aerosol-generating substrate carrier 40, wherein like numerals reference like parts. In the embodiment shown in FIG. 4A and FIG. 4B, the aerosol-generating substrate carrier 40 comprises a slidable cover 41 and a substrate holder 44. The slidable cover 41 may comprise an attaching mechanism 42, such as a recess or a compartment, for receiving and retaining a susceptor 45 therein. The substrate holder 44 may comprise a slot for insertion of the substrate 13 therein. In some embodiments, the aerosol-generating substrate carrier 40 may comprise the biasing mechanism 23 (not shown in FIG. 4A and FIG. 4B) to facilitate the movement of the carrier 40 between an open (extended) state and a closed (retracted) state. The biasing mechanism 23 may be positioned axially within the substrate holder 44, exerting a biasing force to push the slidable cover 41 and the substrate holder 44 apart. This separation creates the open state, where the susceptor 45 is retracted from the slot and exposes the slot for substrate insertion.

[0070] When a compressive force is applied to move the slidable cover 41 towards the substrate holder 44, the carrier 40 is actuated into the closed state, and the biasing mechanism 23 may be compressed. In FIG. 4A, the substrate 13 contacts the susceptor 45 and force is further applied to move the slidable cover 41 towards the substrate holder 44, the susceptor 45 punctures the substrate 13. The substrate holder 44 may be held in place in the closed state due to the contact force between the punctured substrate 13 and the susceptor 45.

[0071] In the closed state, mechanical energy is stored. Once the external force is removed, the biasing mechanism 23 releases this energy, automatically returning the carrier 40 to the open state. In FIG. 4B, the biasing mechanism 23 may urge the slidable cover 41 away from the substrate holder 44 and the substrate 13, leaving the slot accessible. In the closed state, the substrate 13 is in its operational position within the carrier 40 and in contact with the susceptor 45 to enable uniform heating.

[0072] FIG. 5 illustrates the susceptor 25 and substrate 13 being surrounded by inductive coils 50 in an aerosol-generating device (full device not shown) to generate heat using the susceptor 25 through inductive heating. In some embodiments, the inductive coil of the aerosol generating substrate device operates at a frequency between 0.1 megahertz (MHz) and 30 MHz to efficiently generate heat within the susceptor 25.

[0073] In some embodiments, the aerosol-generating substrate 13 may comprise aerosol formers such as glycerine, propylene glycol, glycerin, triacetin, water, polyols, glycol ethers, polyol esters, esters, fatty acids, alginate, Nicotine, tobacco, plant-based material, nicotine salt matrix, homogenized tobacco material, tobacco particles, volatile tobacco flavour compounds, ethanol, water, flavorants. In some embodiments, the aerosol-generating substrate 13 may have the shape of a rod, typically cylindrical, with dimensions in a range of 2 millimetres (mm) to 20 mm in diameter and in a range of 2 mm to 50 mm in length.

[0074] In some embodiments, the filter 38 may comprise a heat-resistant material configured to allow passage of the aerosol generated by the heating of the aerosol-forming substrate while filtering out particulate matter or undesirable compounds. In some embodiments, the filter 38 may be made of materials selected from the group consisting of cellulose acetate, carbon fibres, or porous ceramic materials, designed to withstand the temperatures generated by the heating process.

[0075] In some embodiments, the aerosol-generating substrate carrier 10, 30, the body 11, the housing 22 and/or the holder 14 is formed from or of a polymer, a metal or a mixed multi-layered structure of the polymer and the metal.

[0076] In some embodiments, the aerosol-generating substrate carrier 10, 30 may comprise body 11 and/or the substrate holder 14 in a cylindrical shape.

[0077] In some embodiments, the substrate holder 14 comprises a diameter in a range of 2 mm to 20 mm; or between 2 mm and 20 mm.

[0078] In some embodiments, the substrate holder 14 comprises a length in a range of 2 mm to 50 mm; or between 2 mm and 50 mm.

[0079] In some embodiments, a length of the aerosol-generating substrate carrier 10, 30 is in a range of 20 mm to 100 mm; or between 20 mm and 100 mm when the holder 14 is in an open position.

[0080] In some embodiments, a length of the aerosol-generating substrate carrier 10, 30 is between 20 mm and 95 mm when the holder 14 is in a closed position.

[0081] In some embodiments, a diameter of the housing 22 is in a range of 0.5 mm to 10 mm; or between 0.5 mm and 10 mm, larger than a diameter of the interfacing portion 33.

[0082] In some embodiments, the housing 22 has a length in a range of 2 mm to 50 mm; or between 2 mm and 50 mm.

[0083] In some embodiments, the interfacing portion 33 is configured to at least partially enclose the aerosol-generating substrate 13 in the holder 14, as a roof, when the holder 14 is in the closed position.

[0084] In some embodiments, the susceptor 25 is a length in a range of 2 mm to 20 mm; or between 2 mm and 20 mm.

[0085] In some embodiments, the susceptor 25 is of an elongated shape, for example, one or more of the following shapes: a pin, a needle, a rod, a blade, a cone, a cylinder, a strip and/or a cup.

[0086] In some embodiments, the susceptor 25 comprises a diameter between 0.1 mm to 5 mm.

[0087] In some embodiments, the susceptor 25 is configured to puncture through the aerosol-generating substrate 13 when the carrier 10, 30 is in the closed position. To facilitate uniform heat dissipation, the susceptor 25 may puncture through the aerosol-generating substrate 13 via a central axis of the substrate 13, when the holder 14 is in the closed position.

[0088] In some embodiments, the susceptor 25 may be detachably attached to the carrier body 11 and/or the housing 22 via the interfacing portion 36.

[0089] In some embodiments, the interfacing portion 33 connect the substrate holder 14 and the carrier body 11 and/or the housing 22 via a guiding mechanism, wherein the guiding mechanism comprises flanges and corresponding grooves, or rails and sliders, disposed on the interfacing portion 33 and the substrate holder 14 respectively to facilitate the slidable connection. In some embodiments, the guiding mechanism may further comprise at least one of a hinge mechanism and/or a telescopic mechanism.

[0090] In some embodiments, the spring 34 may be a metal spring or a plastic spring.

[0091] In some embodiments, the filter 38 comprises a heat-resistant material, for example, cellulose acetate, carbon fiber, and/or porous ceramic. The filter 38 may be configured to remove one or more substances from the generated aerosol.

[0092] In some embodiments, the aerosol-generating substrate carrier 10, 30 further comprising a gasket 12 configured to minimize or prevent leakage of the generated aerosol.

[0093] According to another aspect of the present disclosure there is provided an aerosol-generating device comprising: an aerosol-generating substrate carrier 10, 30, the aerosol-generating substrate carrier 10, 30 comprising: a substrate holder 14, the substrate holder 14 shaped and dimensioned to receive one or more aerosol-generating substrate 13; a carrier body

11 (slidably) connected to the substrate holder 14, the carrier body 11 configured to embed or house a susceptor 25, the carrier body 11 comprising a guiding mechanism to slidably move the substrate holder 14 towards and away from the carrier body 11; wherein the susceptor 25 comprises a material with a predefined Curie temperature; and wherein the aerosol-generating substrate carrier 10 is removably attached to the aerosol-generating device; an electromagnetic coil 50, the electromagnetic coil 50 configured to induce an electrical current through the susceptor 25.

[0094] It may be appreciable that the induced electrical current through the susceptor 25 in turn generate heat energy which heats the substrate and produces aerosol.

[0095] In some embodiments, the electromagnetic coil 50 is configured to generate an alternating magnetic field for inducing eddy currents in the susceptor 25.

[0096] In some embodiments, the electromagnetic coil 50 comprises a helical, planar or multi-coil configuration.

[0097] In some embodiments, the electromagnetic coil 50 is configured to operate at a frequency between 0.1 MHz and 30 MHz.

[0098] According to another aspect of the present disclosure there is provided a method 600 for manufacturing an aerosol-generating substrate carrier 10, 30, the method 600 comprising:

[0099] Step S602: providing a substrate holder 14, the substrate holder 14 shaped and dimensioned to receive one or more aerosol-generating substrate 13;

[00100] Step S604: providing a carrier body 11;

[00101] Step S606: providing a susceptor 25, embedding or attaching the susceptor 25 to the carrier body 11;

[00102] Step S608: slidably connecting the substrate holder 14 with the carrier body 11 using a guiding mechanism. In some embodiments, the substrate holder 14 may be slidably connected to the carrier body 11 using a guiding mechanism.

[00103] Step S610: configuring the susceptor 25 with a predefined Curie temperature. For example, the susceptor 25 may be configured by selecting and/or forming the susceptor 25 using a material with a predefined Curie temperature.

[00104] Step 612: configuring the aerosol-generating substrate carrier 10, 30 to be removably attached to an aerosol-generating device. For example, the aerosol-generating substrate carrier 10, 30 may comprise one or more tabs arranged to fit into one or more corresponding grooves or slots in the aerosol-generating device.

[00105] In some embodiments, the method 600 further comprises providing one or more biasing mechanism, and configuring the biasing mechanism to urge the carrier body 11 away from the substrate holder 14.

[00106] According to another aspect of the present disclosure there is provided a kit, the kit comprising the aerosol-generating substrate carrier 10, 30; an aerosol-generating device; one or more substrates 13; and one or more filters 38.

[00107] The aerosol-generating substrate carrier 10, 30 may comprise a substrate holder 14 shaped and dimensioned to receive one or more aerosol-generating substrate 13; a carrier body 11 connected to the substrate holder 14, the carrier body 11 configured to embed or house a susceptor 25, the carrier body 11 comprising a guiding mechanism to slidably move the substrate holder 14 towards and away from the carrier body 11; wherein the susceptor 25 comprises a material with a predefined Curie temperature; and wherein the aerosol-generating substrate carrier 10 is removably attached to the aerosol-generating device.

[00108] According to another aspect of the present disclosure there is provided a method 700 of using the aerosol-generating substrate carrier 10, 30, comprising:

[00109] Step S702: positioning the aerosol-generating substrate carrier 10, 30 to an open position;

[00110] Step S704: inserting one or more substrates 13 into the substrate holder 14;

[00111] Step S706: slidably moving the substrate holder 14 towards the housing 22 (i.e. to the closed position);

[00112] Step S708: inserting the aerosol-generating substrate carrier 10, 30 into an inductive based aerosol-generating device; and

[00113] Step S710: activating the aerosol-generating device by providing inductive current through the susceptor 25.

[00114] In some embodiments, the method 700 further comprises positioning one or more filter units in a filter slot.

[00115] While the disclosure has been particularly shown and described with reference to specific embodiments, it should be understood by those skilled in the art that various changes in form and detail may be made therein without departing from the spirit and scope of the disclosure as defined by the appended claims. The scope of the disclosure is thus indicated by the appended claims and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced.

CLAIMS

1. An aerosol-generating substrate carrier (10, 30) for use with an aerosol-generating device, the aerosol-generating substrate carrier (10, 30) comprising:

a substrate holder (14) shaped and dimensioned to receive one or more aerosol-generating substrate (13);

a carrier body (11) connected to the substrate holder (14), the carrier body (11) configured to embed or house a susceptor (25), the carrier body (11) comprising a guiding mechanism to slidably move the substrate holder (14) towards and away from the carrier body (11);

wherein the susceptor (25) comprises a material with a predefined Curie temperature; and wherein the aerosol-generating substrate carrier (10, 30) is configured to be removably attached to the aerosol-generating device.

2. The aerosol-generating substrate carrier (10, 30) according to claim 1, wherein the carrier body (11) comprises a biasing mechanism (23), the biasing mechanism (23) configured to urge the carrier body (11) away from the substrate holder (14).

3. The aerosol-generating substrate carrier (10, 30) according to claim 1 or 2, wherein the predefined Curie temperature is in a range of 200°C to 600°C.

4. The aerosol-generating substrate carrier (10, 30) according to any one of the preceding claims, wherein the carrier body (11) and/or the holder (14) comprises a polymer, a metal or a mixed multi-layered structure of the polymer and the metal, wherein optionally, the polymer has a melting point above 200°C, and wherein optionally, the polymer comprises polyether ether ketone (PEEK) or polyetherimide (PEI).

5. The aerosol-generating substrate carrier (10, 30) according to any one of the preceding claims, wherein the susceptor (25) comprises at least one of a paramagnetic, ferromagnetic and/or ferrimagnetic material, wherein optionally, the susceptor (25) comprises 5% to 90% of a ferromagnetic or paramagnetic material, and/or the susceptor (25) optionally comprises at least one of the following: stainless steel, nickel, permalloy, mu-metal, aluminium, iron,

copper, bronze, cobalt, graphite, molybdenum, silicon carbide, niobium, Inconel alloy, iron-nickel-copper-chromium soft magnetic alloy, non-conductive ferrimagnetic ceramics and/or an iron, chromium, and aluminium (FeCrAl) alloy.

6. The aerosol-generating substrate carrier (10, 30) according to any one of the preceding claims, wherein the carrier body (11) and/or the holder (14) is of a cylindrical shape.

7. The aerosol-generating substrate carrier (10, 30) of any of the preceding statements, wherein the substrate holder (14) has a curved surface having a diameter in a range of 2 mm to 20 mm, and a length in a range of 2 mm to 50 mm.

8. The aerosol-generating substrate carrier (10, 30) according to any one of the preceding claims, wherein the carrier body (11) comprises a housing (22) and an interfacing portion (33), the housing (22) comprising a greater diameter relative to the interfacing portion (33) and the substrate holder (14), and wherein the interfacing portion (33) comprises the guiding mechanism for interfacing with the substrate holder (14).

9. The aerosol-generating substrate carrier (10, 30) according to claim 8, wherein the interfacing portion (33) comprises a curved flap to form an enclosure with a slot (18) of the substrate holder (14).

10. An aerosol-generating device comprising:

an aerosol-generating substrate carrier (10, 30), the aerosol-generating substrate carrier (10, 30) comprising:

a substrate holder (14), the substrate holder (14) shaped and dimensioned to receive one or more aerosol-generating substrate (13);

a carrier body (11) connected to the substrate holder (14), the carrier body (11) configured to embed or house a susceptor (25), the carrier body (11) comprising a guiding mechanism to facilitate sliding motion of the substrate holder (14) towards and away from the carrier body (11); wherein the susceptor (25) comprises a material with a predefined Curie temperature; and wherein the aerosol-generating substrate carrier (10, 30) is removably attached to the aerosol-generating device;

an electromagnetic coil (50), the electromagnetic coil (50) configured to induce an electrical current through the susceptor (25).

11. The aerosol-generating device according to claim 10, wherein the electromagnetic coil (50) comprises a helical, planar or multi-coil configuration.

12. The aerosol-generating device according to claim 10 or 11, wherein the electromagnetic coil (50) is configured to operate at a frequency between 0.1 MHz and 30 MHz.

13. A method (600) for manufacturing an aerosol-generating substrate carrier (10, 30), the method (500) comprising:

- providing (S602) a substrate holder (14), the substrate holder (14) shaped and dimensioned to receive one or more aerosol-generating substrate (13);

- providing (S604) a carrier body (11);

- providing (S606) a susceptor (25), embedding or attaching the susceptor (25) to the carrier body (11);

- slidably connecting (S608) the substrate holder (14) with the carrier body (11) using a guiding mechanism;

- configuring (S610) the susceptor (25) with a predefined Curie temperature; and

- configuring (S612) the aerosol-generating substrate carrier (10, 30) to be removably attached to an aerosol-generating device.

14. The method (600) according to claim 13, further comprises providing one or more biasing mechanism (23), and configuring the biasing mechanism (23) to urge the carrier body (11) away from the substrate holder (14).

15. A kit of parts, the kit comprising

- the aerosol-generating substrate carrier (10, 30) of any one of claims 1 to 9; the aerosol-generating device of any one of claims 10 to 12; one or more aerosol-generating substrates (13); and one or more filters (38).