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(54) **AEROSOL GENERATION ARTICLE**

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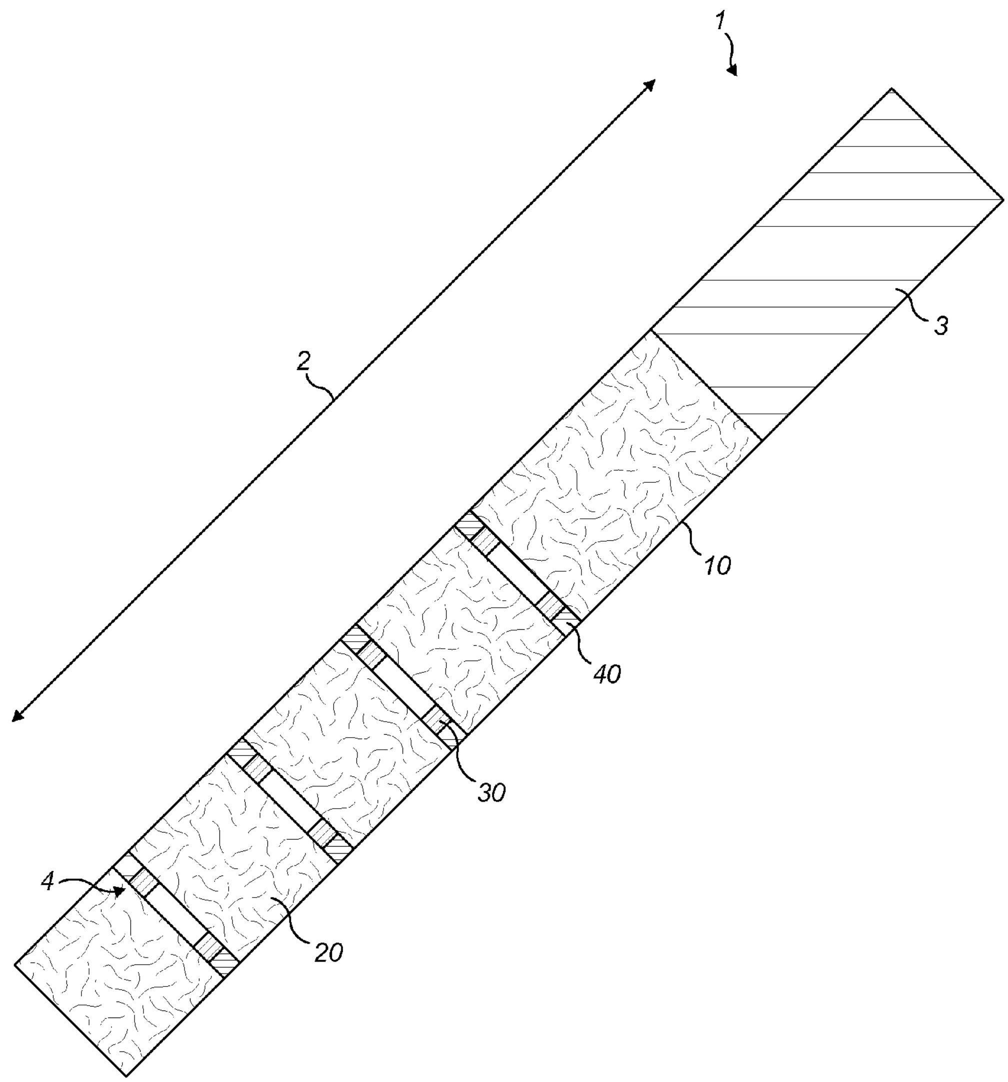
(57) **ABSTRACT**

An aerosol generation article includes a housing, a substrate arranged within the housing, the substrate configured to generate an aerosol when heated; at least one heating element arranged within the housing and adjacent the substrate; wherein each heating element includes: a susceptor; and an insulator; wherein the susceptor and the insulator, with the insulator at least partially surrounding the susceptor, are configured such that, in use, when an electromagnetic field is applied by an aerosol generation device, the heating element heats the adjacent substrate without damaging the housing of the article.



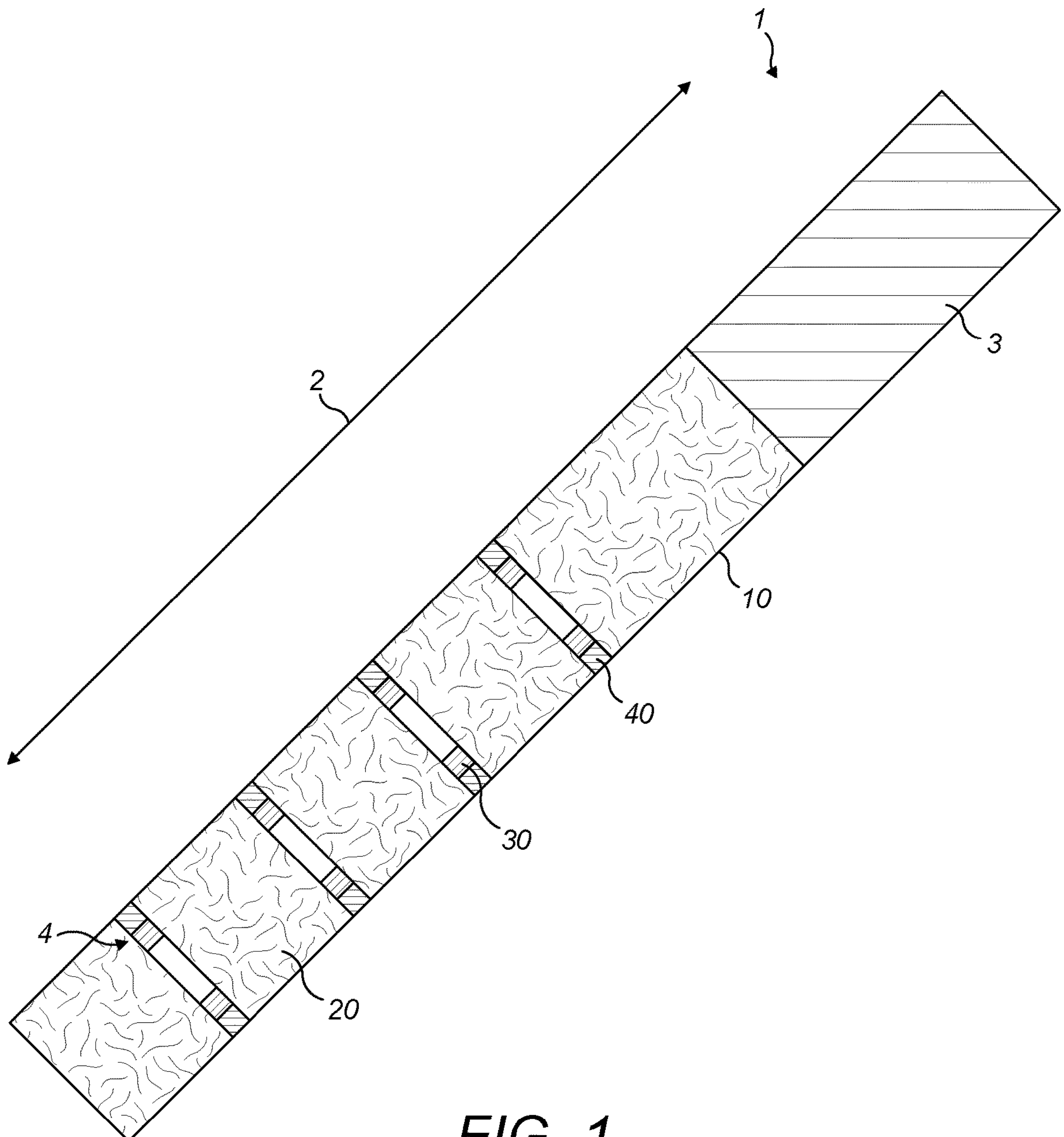


FIG. 1

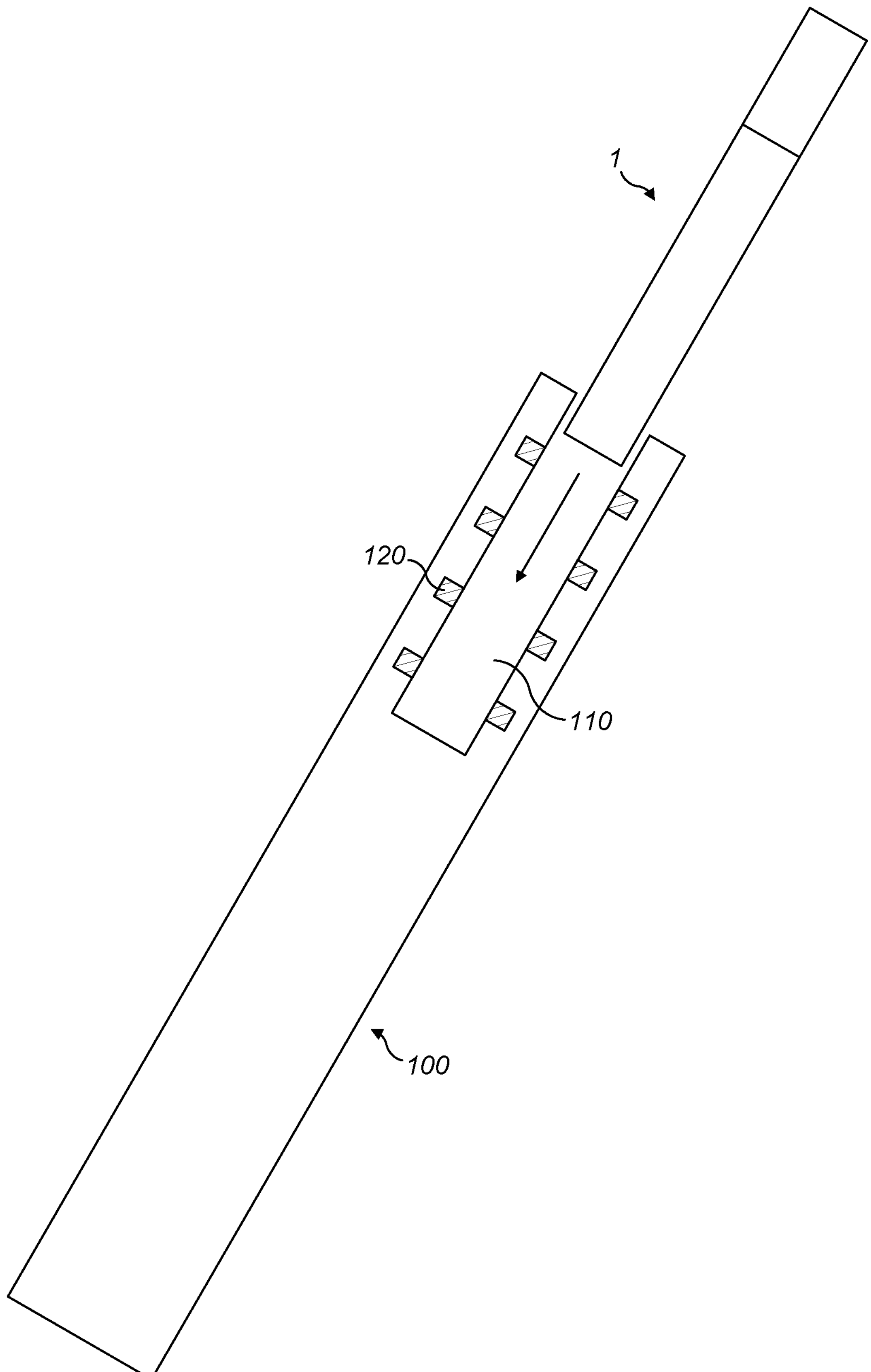


FIG. 2

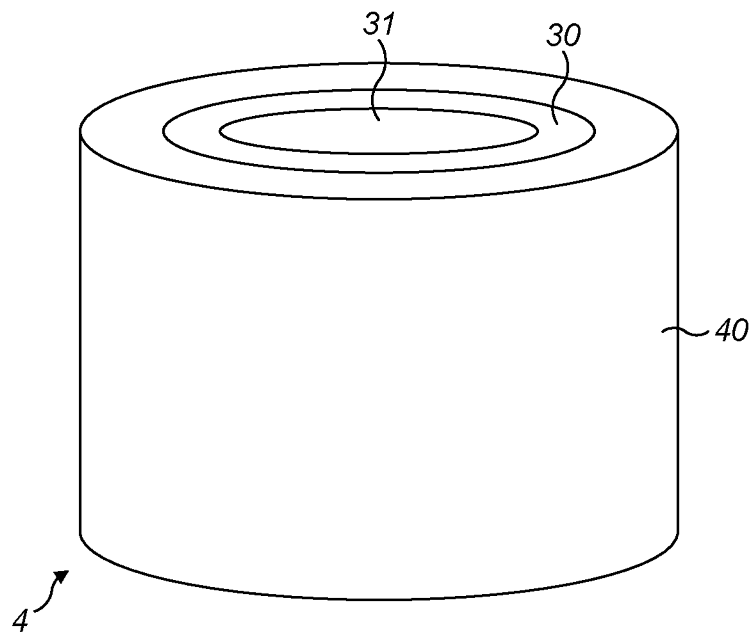


FIG. 3A

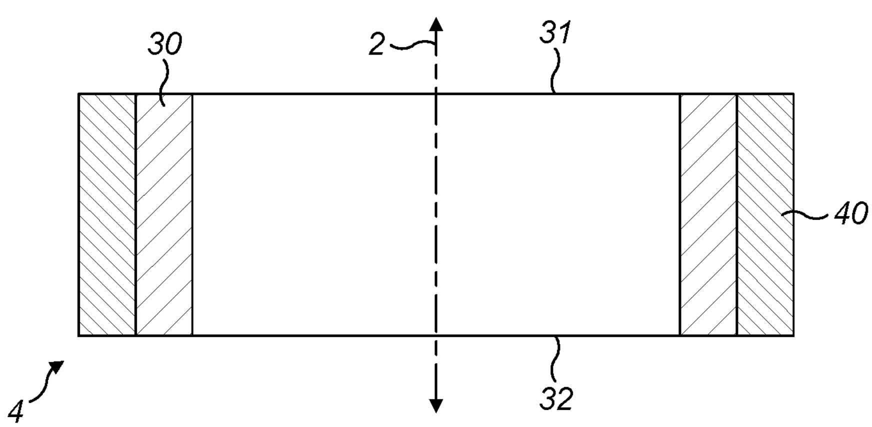


FIG. 3B

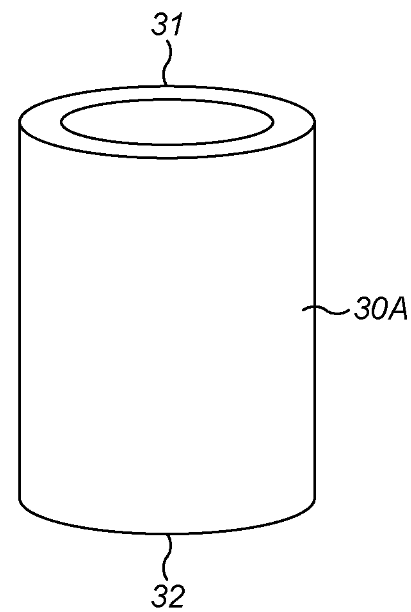


FIG. 4A

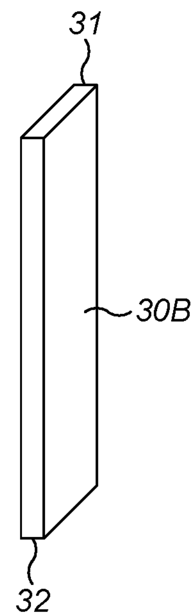


FIG. 4B

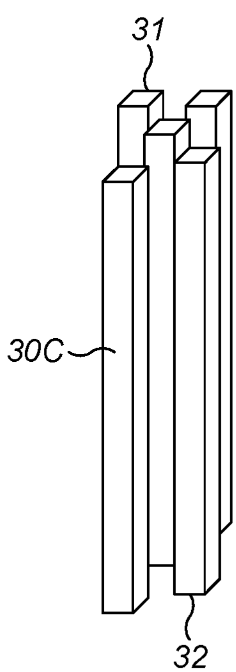


FIG. 4C

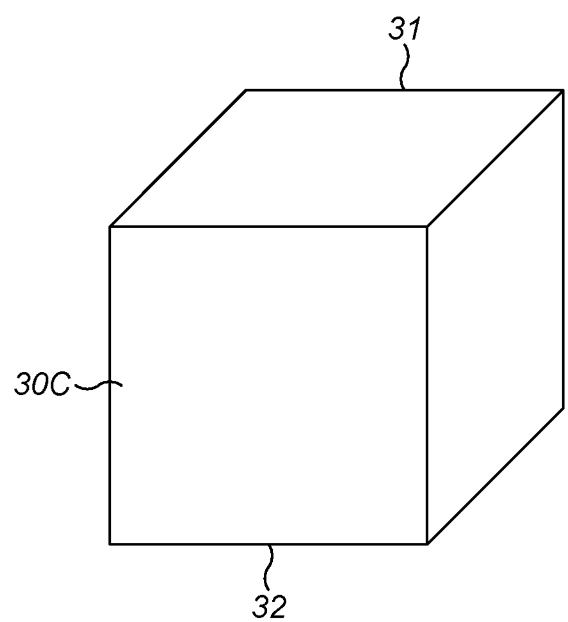


FIG. 4D

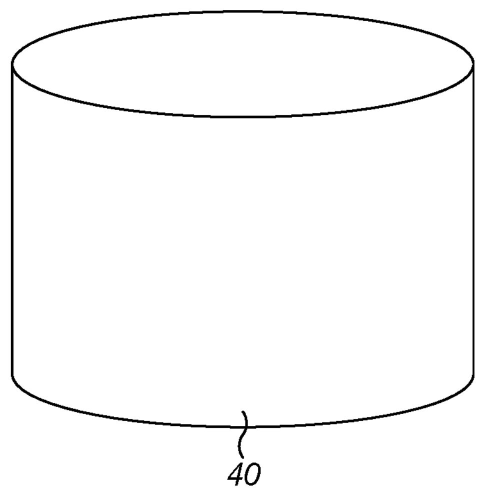


FIG. 5A

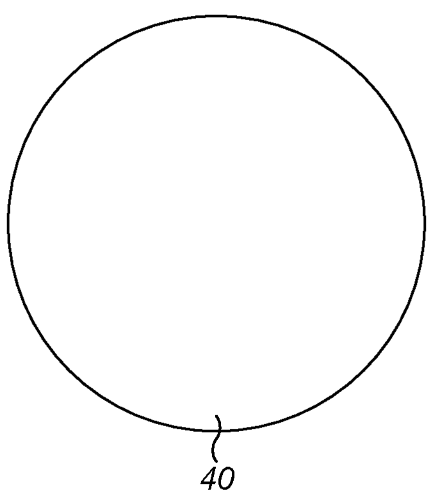


FIG. 5B

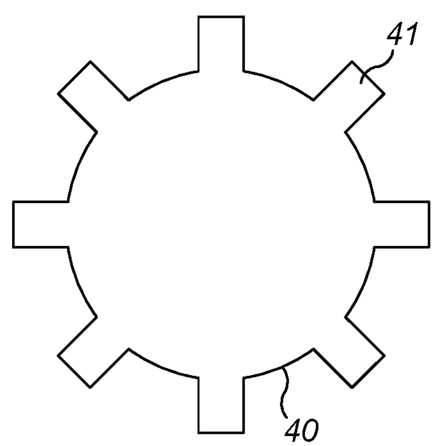


FIG. 5C

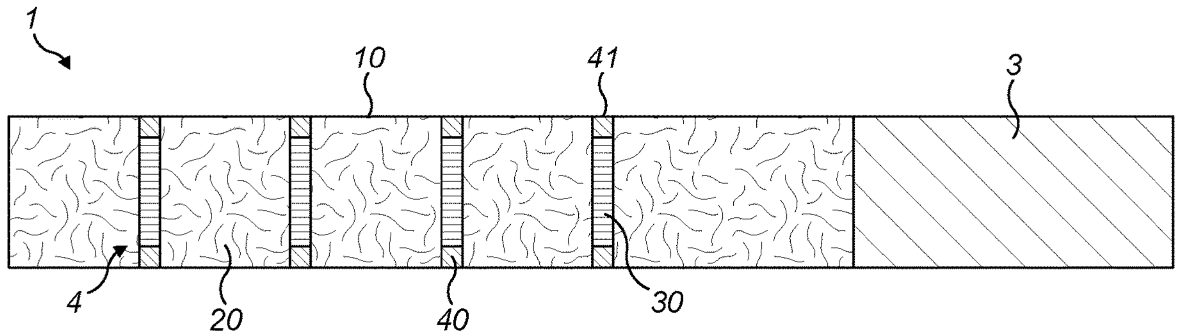


FIG. 6A

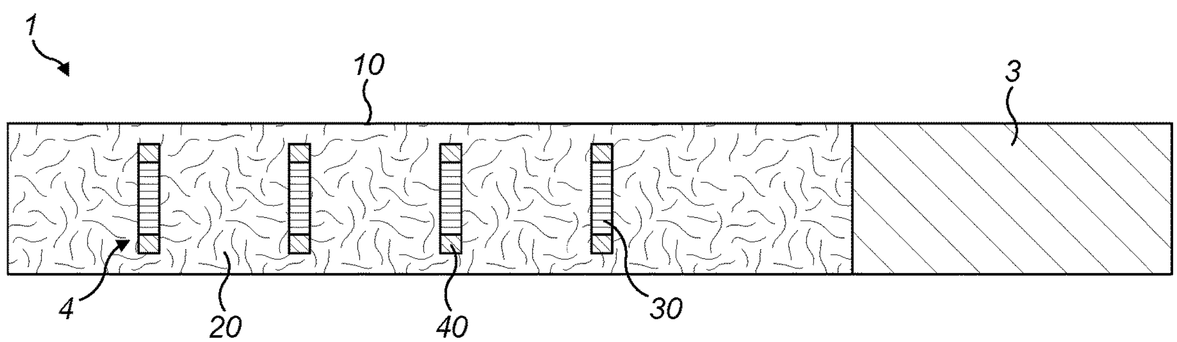


FIG. 6B

AEROSOL GENERATION ARTICLE

TECHNICAL FIELD

[0001] The present disclosure relates to aerosol generation devices and consumable articles for aerosol generation devices, in particular to induction heatable articles. The article may comprise tobacco or other suitable aerosol substrate materials to be heated, rather than burned, to generate an aerosol for inhalation.

BACKGROUND

[0002] The popularity and use of reduced-risk or modified-risk devices (also known as vaporisers) has grown rapidly in the past few years as an aid to assist habitual smokers wishing to quit smoking traditional tobacco products such as cigarettes, cigars, cigarillos, and rolling tobacco. Various devices and systems are available that heat or warm aerosolisable substances as opposed to burning tobacco in conventional tobacco products.

[0003] A commonly available reduced-risk or modified-risk device is the heated substrate aerosol generation device or heat-not-burn device. Devices of this type generate an aerosol or vapour by heating an aerosol substrate that typically comprises moist leaf tobacco or other suitable aerosolisable material to a temperature typically in the range 150° C. to 350° C. Heating an aerosol substrate, but not combusting or burning it, releases an aerosol that comprises the components sought by the user but not the toxic and carcinogenic by-products of combustion and burning. Furthermore, the aerosol produced by heating the tobacco or other aerosolisable material does not typically comprise the burnt or bitter taste resulting from combustion and burning that can be unpleasant for the user and so the substrate does not therefore require the sugars and other additives that are typically added to such materials to make the smoke and/or vapour more palatable for the user.

[0004] One such method of heating aerosol substrates employs an inductive heating system, where an induction coil (also referred to as an inductor) is provided with the device and a susceptor is provided with or near the aerosol substrate. Electrical energy is provided to the inductor when a user activates the device which in turn creates an electromagnetic field. The susceptor couples with the field and generates heat which is transferred to the substrate and causes it to generate an aerosol.

[0005] However, there are various problems associated with using inductive heating systems in aerosol generation systems. It is difficult to generate a precise heat profile in the region of the susceptor and, as a result, it is not easily possible to quickly and efficiently heat an aerosol substrate without burning other areas of the consumable article or aerosol generation device. Existing attempts to create a safe and efficient heat profile cannot readily be integrated into existing high speed production machinery and so cannot be easily produced.

[0006] The present invention seeks to solve at least some of the above problems.

SUMMARY

[0007] According to a first aspect of the invention, there is provided an aerosol generation article comprising: a housing, a substrate arranged within the housing, the substrate configured to generate an aerosol when heated; at least one heating element arranged within the housing and adjacent the substrate; wherein each heating element comprises: a susceptor; and an insulator; wherein the susceptor and the insulator, with the insulator at least partially surrounding the susceptor, are configured such that, in use, when an electromagnetic field is applied by an aerosol generation device, the heating element heats the adjacent substrate without damaging the housing of the article.

[0008] The insulator is arranged between the susceptor and the housing so the susceptors can be heated to even higher temperatures, so as to more quickly heat the substrate and generate an aerosol, without burning or otherwise damaging the housing of the article. In this way, as the insulator surrounds at least part of the susceptor, the susceptor of the heating element can be inductively heated to higher temperatures without damaging the article, and in particular without damaging the housing of the article. In addition to the benefits during use of the article, having a susceptor and insulator form individual, at least partially insulated heating elements in this way is particularly beneficial when manufacturing aerosol generation articles comprising these heating elements. Heating elements configured in this manner can be simply incorporated into existing processes for manufacturing aerosol generation articles, advantageously including high-speed processes such as linear combining processes, thereby also saving manufacturing costs.

[0009] Preferably, the insulator is a solid component of insulator material. In this way, the insulator provided the beneficial effects discussed above as well increasing the strength of the article, and in particular the structural strength of the article. The insulator material should also be resistant to burning or heat damage at typical operation temperatures of the aerosol generation device. The solid insulator material may comprise a ceramic such as aluminium oxide or silicon dioxide, or calcium oxide or PEEK.

[0010] Preferably, the insulator directly contacts the susceptor. More preferably, the insulator directly contacts the susceptor where the insulator surrounds the susceptor. This configuration further increases both the strength of the article and the effectiveness of the insulation, as well as being straightforward to incorporate into aerosol generation article manufacturing processes.

[0011] Preferably, the article is an elongate shape such that an article axis is defined between two longitudinally opposing ends of the article.

[0012] Preferably, the susceptor comprises a first end and a second end, and the heating element is arranged within the housing such that the first end and the second end are axially aligned along the article axis.

[0013] In this way, the heating element can be easily incorporated into an article during the manufacturing process. Furthermore, as the first end and second end of the susceptor are aligned with the article axis, they are positioned away from the housing of the article and are less likely to damage the housing from heating.

[0014] Optionally, the insulator surrounds the susceptor such that the first end and the second end of the susceptor are exposed by the insulator. Optionally, the insulator surrounds all of the susceptor except for the opposing ends of the susceptor, such that the first end and the second end of the susceptor are not covered by the insulator. As the first end and the second end of the susceptor are less likely to damage the housing, they do not need to be covered by the insulator.

In this way, less insulator material is used in the heating element, saving costs and reducing the volume occupied by the heating element.

[0015] Optionally, the insulator fully encapsulates the susceptor. That is, the insulator fully surrounds an exterior surface of the susceptor. In this way, the maximum thermal protection is provided to the housing of the article while still allowing the heating element to heat the substrate.

[0016] Optionally, the susceptor is a cylindrical tube shape. The cylindrical shape corresponds to the shape of typical aerosol generation articles and so allows for easy integration of the heating element into such articles, as well as even heating of substrate. In addition, the tube shape allows the inductively generated eddy currents to flow continuously whilst reducing the amount of susceptor material that is not resistively heated by the eddy currents flowing near the surface, thereby increasing the speed at which the susceptor heats to the desired temperature when an electromagnetic field is applied.

[0017] Preferably, a thickness of the tube walls is between 50 μm and 150 μm. It has been found that such thicknesses provide the desired balance between optimum an optimum heating profile and ease of manufacture

[0018] Optionally, the susceptor is a flat plate shape. Optionally, the susceptor is a hollow cube shape. Optionally, the susceptor comprises multiple strands of susceptor material. Preferably, the minimum thickness of a portion of the susceptor is between 50 μm and 150 μm.

[0019] Optionally, the insulator is substantially the same shape as the susceptor. For example, when the susceptor exhibits a cylindrical shape, the insulator may also be cylindrically shaped. In particular, a larger cylindrical shape in order to at least partially surround the susceptor. When the insulator exhibits substantially the same shape as the susceptor, the length of the insulator, e.g. along a longitudinal axis of the heating element, is substantially the same or greater than the length of the susceptor (as measured along the same axis typically).

[0020] Optionally, the insulator comprises a plurality of projections of insulator material extending from the heat element. In this way, the projections increase the surface area to volume ratio of the insulator and so increase the efficiency of heat dissipation from the susceptor away from the housing. The projections may be arranged to define channels or gaps (e.g. between adjacent projections) for air to flow through the article.

[0021] Preferably, the plurality of projections extend from the heating element perpendicularly to a longitudinal axis of the article. When the article is an elongate shape this longitudinal axis of the article is the article axis discussed above.

[0022] Preferably, an outer diameter of the heating element is substantially equal to an inner diameter of the housing. That is, as the insulator at least partially surrounds the susceptor, the insulator directly contacts the interior of the housing. In this way, an article that evenly heats substrate may be more easily fabricated.

[0023] Preferably, the outer diameter of the heating element is between 5 mm and 8 mm.

[0024] Preferably, a length of a heating element is greater than or equal to 6 mm. In this way, the heating element may be easily manufactured and incorporated into existing aerosol generation article manufacturing processes than heating elements of shorter length, while still providing space for efficient substrate heating within the article. The length of the heating element is measured from a first end of the heating element to a second end of the heating element, wherein, when the heating element is arranged within the article, the first end and second end of the heating element are axially aligned with a longitudinal axis of the article. Optionally, the length of the heating element is greater than or equal to 6 mm, and less than 8 mm so as to more efficiently heat the substrate nearby the heating element.

[0025] Preferably, the at least one heating element comprises a plurality of heating elements. In this way, portions of substrate within the article can be more evenly and efficiently heated.

[0026] Preferably, the plurality of heating elements are axially aligned with a longitudinal axis of the article and sequentially arranged along a length of the article, and wherein the substrate is arranged between adjacent heating elements. In this way, portions of substrate are sequentially divided by heating elements such that portions of substrate and heating elements alternate along the length of the article. This provides efficient and even heating of the substrate. When the article is an elongate shape this longitudinal axis of the article is the article axis discussed above.

[0027] According to a second aspect of the invention, there is provided an aerosol generation system comprising: the aerosol generation article of the first aspect; and an aerosol generation device comprising a heating chamber and at least one induction coil; wherein, in use, the device is configured to receive the article in the heating chamber such that the induction coil is aligned with the susceptor.

[0028] In this way, when the article is received in the device and the device is operated by a user, the induction coil generates an alternating and time-varying electromagnetic field that couples with the susceptor(s) of the article, causing the susceptor(s) to heat the adjacent substrate. The device may comprise a single induction coil configured to extend along at least the majority of the length of the heating chamber or, alternatively, may comprises a plurality of induction coils that are each arranged to align with at least one susceptor of a received article.

BRIEF DESCRIPTION OF THE DRAWINGS

[0029] Examples of the present invention will now be described with reference to the accompanying drawings, in which:

[0030] FIG. **1** is a schematic cross-section of an aerosol generation article according to the invention;

[0031] FIG. **2** is a schematic cross-section of an aerosol generation system comprising an aerosol generation device and an aerosol generation article according to the invention, wherein the aerosol generation article is being introduced to the aerosol generation device.

[0032] FIG. **3**A is a schematic illustration of a heating element for an aerosol generation article according to the invention, FIG. **3**B is a schematic cross-section of the heating element;

[0033] FIGS. **4**A-**4**D are schematic illustrations of a susceptor for an aerosol generation article according to the invention;

[0034] FIG. **5**A is a schematic illustration of a insulator for an aerosol generation article according to the invention, FIGS. **5**B and **5**C are schematic cross-sections of insulators for an aerosol generation article according to the invention;

[0035] FIGS. **6**A and **6**B are schematic illustrations of aerosol generation articles according to the invention.

DETAILED DESCRIPTION

[0036] As described herein, a vapour is generally understood to refer to a substance in the gas phase at a temperature lower than its critical temperature, which means that the vapour can be condensed to a liquid by increasing its pressure without reducing the temperature, whereas an aerosol is a suspension of fine solid particles or liquid droplets, in air or another gas. It should, however, be noted that the terms 'aerosol' and 'vapour' may be used interchangeably in this specification, particularly with regard to the form of the inhalable medium that is generated for inhalation by a user.

[0037] FIG. **1** is a schematic cross-section of an aerosol generation article **1** (article) according to the invention.

[0038] In FIG. **1**, the aerosol generation article **1** comprises an housing **10**, such as a paper wrapper, that houses various components of the article **1**. In the depicted embodiment the article **1** is an elongate shape such that an article axis **2** is defined by the article **1** between the two longitudinally opposing ends of the article **1**. An elongated cylinder shape is the preferred shape for the article **1** though the skilled person will appreciate that the article **1** may be formed in any shape that is sized to fit the components described in the various embodiments set out herein and to allow the article **1** to be received by a corresponding aerosol generation device **100**. For example, the article **1** may be a cuboidal shape.

[0039] The aerosol generation article **1** comprises an aerosol substrate **20** (substrate), such as tobacco, arranged within the housing **10**. The article also includes a plurality of heating elements **4** arranged within the housing **10** and positioned adjacently to the substrate **20**. In use, the heating elements **4** are configured to heat, without burning, the substrate **20** so as to form an aerosol for inhalation by a user.

[0040] Although the heating elements **4** shown in FIGS. **1**, **3**A, **3**B, **6**A and **6**B are substantially shaped as short cylinders, other sizes and shapes may be used to alter the properties of the heating element **4** and tune the heating effects provided and therefore the aerosol generated. Similarly, the number of and positioning of heating elements **4** within the article **1** can also be adapted to tune the generated aerosol. For example, an article **1** may comprise only a single heating element **4** that is shaped to extend along a relatively large portion of the article **1** so as to evenly heat the substrate in this way. A smaller sized article **1** will typically not contain as much substrate **20** as a larger article and so is anticipated to use need heating elements **4** in order to produce the desired aerosol. Moreover, using a large number of relatively small sized heating elements **4** evenly spaced throughout the article **1** may provide more even heat distribution than a smaller number of relatively large sized heating elements **4**, though articles **1** using these larger heating elements are easier to manufacture.

[0041] Each heating element **4** comprises a susceptor **30** and an insulator **40**, where the insulator **40** at least partially surrounds the susceptor **30** such that each heating element **4** is an at least partially insulated heating element **4**. The susceptor **30** is electrically conductive and comprises a susceptor material such as mild steel, stainless steel, aluminium, iron, etc. The insulator **40** is a thermal insulator and so prevents the heating element **4** overheating and damaging the housing **10** during use. The insulator **40** comprises an insulator material and is preferably a ceramic like aluminium oxide or silicon dioxide, other insulator materials include calcium oxide and PEEK. The insulator **40** can completely surround and encapsulate the susceptor **30** or may only partially surround the susceptor **30**. In the example of FIG. **1**, shown in more detail in FIGS. **3**A and **3**B, the susceptor **30** is a cylindrically shaped tube with only the outer face of the tube being covered by the insulator **40** and the ends **31**,**32** of the susceptor **30** still exposed by the insulator **40**, such that the insulator **40** forms another larger cylindrical tube around the susceptor **30**. Preferably, the heating element **4** is arranged within the article **1** such that a first end **31** of the susceptor **30** and a second end **32** of the susceptor are axially aligned along the article axis **2** to provide more even heating. Preferably, when the susceptor **30** is only partially surrounded by the insulator **40**, the heating element **4** is arranged such that the insulator **40** is closer to the housing **10** than the susceptor **30** is to the housing **10**. That is, the sides of the susceptor **30** closest to the housing **10** are the sides surrounded by the insulator **40**.

[0042] During use, an electromagnetic field is applied to the susceptor **30** and generates eddy currents and/or magnetic hysteresis losses in the susceptor **30** causing it to heat up. The heat is then transferred from the susceptor **30** to the substrate **20**, for example through conduction, convention, and radiation, which results in the substrate **20** heating and generating the aerosol for inhalation. During this process, the thermal insulation properties of the insulator **40** prevent excess heat being transmitted (e.g. conducted) to the housing **10** of the article **1**.

[0043] The article **1** further comprises a filter **3** at an end of the article **1** to alter the properties of a generated aerosol and enhance the user experience. In the articles **1** shown the filter **3** also acts as a mouthpiece from which a user can directly inhale a generated aerosol, however in other examples of the article **1** the mouthpiece and filter **3** are separate elements. In addition, in yet other examples the article **1** may include a filter **3** but not a mouthpiece, or vice versa, or neither a filter **3** nor a mouthpiece. If still used with an aerosol generation system used with the article **1** then these elements could instead be provided separately to the article **1** such as a mouthpiece that is comprised within an aerosol generation device **100**.

[0044] The aerosol generation article **1** is configured to be coupled with an aerosol generation device **100**. FIG. **2** shows an example of an aerosol generation system comprising an aerosol generation article **1** and an aerosol generation device **100**, where the article **1** is being introduced into a heating chamber **110** of the device **100**. The heating chamber **110** defines an interior volume with substantially similar shape as the article **1** the device is configured to receive, in order to provide a secure fit between the components. For example, if the article **1** is an elongate cylinder shape then the interior volume of the heating chamber **110** should also have an elongate cylinder shape with substantially the same (or slightly larger) diameter than the article **1**.

[0045] The device **100** also includes a plurality of induction coils **120**, arranged around the heating chamber **110**, which act as electromagnetic field generators. During use, a high-frequency alternating current is applied to the coils **120**, causing them to generate an alternating and time-varying electromagnetic field that couples with the susceptors **30** of an article **1** received in the heating chamber **110**, causing the susceptors **30** to heat up as discussed above.

[0046] In the device **100** shown in the example of FIG. **2**, the device **100** includes a plurality of separate coils **120** that are sized and positioned to align with the susceptors **30** of a received article **1**. This limits the size of the field generated by the coils while still providing the requisite heating, thereby leading to an efficient use of energy and power. However, this is not required as another example device **100** may have a single coil **120** extending along a larger portion of the heating chamber **110** (or a plurality of larger coils **120**) so the same device **100** can create a field that would be effective when used in combination various different articles **1** that have different heating element **4** configurations.

[0047] The heating element **4**, susceptor **30**, and insulator **40** can take on a variety on forms. Preferably, the susceptor **30** is thin or, if it forms a larger shape, has thin walls, thickness between 50 μm and 150 μm. A susceptor **30** with thickness around 50 μm has been found to provide optimum heating effects in combination with an electromagnetic field altering with frequency around 300 kHz to 500 kHz. Such thin susceptors **30** are effective due to the skin effect where generated eddy currents are found in higher proportions closest to the surface of the susceptor **30**. A thicker susceptor **30** or susceptor **30** with thicker walls will still heat the substrate **20** and generate an aerosol but will take longer to heat up to the desired temperature. However, it has been found that some shapes of susceptors **30**, such as hollow structures, are difficult to manufacture with wall thicknesses of 50 μm so these susceptors **30** may also be used with thicker walls (e.g. 120 μm) to balance the heating properties with ease and cost of manufacture.

[0048] FIGS. **4**A, **4**B, **4**C, and **4**D show several different examples of susceptors **30**A-D according to the invention. The susceptor **30**A is hollow, circular tube shape. The tube shape allows the generated currents to flow continuously whilst reducing the amount of susceptor material that is not heated resistively due to the eddy currents flowing near the surface. The susceptor **30**B is a flat plate shape. The susceptor **30**C comprises a plurality of individual strands of susceptor material. The susceptor **30**C is a cube shape, this could be a hollow cube shape or a solid structure without a cavity.

[0049] Preferably, the shape of the insulator **40** of a heating element **4** substantially corresponds to the shape of the susceptor **30**, or to the shape of the article **1** cross-section perpendicular to the article axis **2**. For example, FIG. **5**A shows a perspective view of a cylindrically shaped insulator **40** for use in combination with a cylindrically shaped susceptor **30**. FIG. **5**B shows a top view of the same insulator **40**.

[0050] As the insulator **40** of the heating element **4** surrounds the insulator **30**, the dimensions of the insulator substantially correspond to those of the heating element **4**. Preferably, the length of the insulator **40** (i.e. when fitted inside an article **1**, the length along the article axis **2**) is greater than or equal to 6 mm. Preferably, the outer diameter of the insulator **40** (or the outer width depending on the shape of the insulator **40**) at the point of largest diameter is substantially the same as the inner diameter of the housing **10**. This helps to ensure the heating element **4** remains in place within the article **1**, providing consistent and efficient heating of the substrate **20** without damaging the housing **10**. For example, the outer diameter of the insulator **40**, and therefore the heating element **4**, is between 5 mm and 8 mm. In another example, the outer diameter of the susceptor **30** is between 5 mm and 7 mm, and the thickness of the insulator **40** (i.e. the distance between the outer diameter of the susceptor **30** and the outer diameter the of the insulator **40**) is between 0.1 mm and 3 mm.

[0051] In some examples of the invention, the insulator **40** comprises projections **41** such as fins of insulator material extending from the heating element **4**. An example of such a heating element **4** is shown in FIG. **5**C. The insulator projections **41** increase the surface area to volume ratio of the insulator **40** and so further assist dissipating heat from the susceptor **30** (e.g. that has been conducted by the insulator **30**) without overheating and damaging the housing **10**. When arranged correctly within an article **1**, the projections **41** are configured to extend towards the housing **10** of the article **1**. The insulator projections **41** may contact the interior of the housing **10** or extend towards the housing **10** but not contact the housing **10**. Having the insulator projections **41** contact the interior of the housing **10** will strengthen the article **1**, helping to reduce accidental damage to the article **1** by a user. These projections **41** can extend directly from the susceptor **30** or may extend from a portion of the insulator **40** that at least partially surrounds the susceptor **30**. The projections **41** can also be used to create gaps for air flow through the article **1** and control the aerosol inhalation experience.

[0052] It will be apparent to the skilled person that the heating elements **4** may be comprised in the article **1** in a wide range of configurations. For example, FIG. **1** shows a schematic cross-section of an aerosol generation article **1** comprising a plurality of heating elements **4** that have a cylindrical tube shape. The cavity within the hollow susceptors **30** may contain substrate **20** for heating or, alternatively, the cavities may be substantially empty and provide air gaps between portions of substrate **20** separated by adjacent heating elements **4**. In FIG. **6**A, the susceptor **30** of the heating element **4** has a solid cylinder shape without a cavity. As aerosol cannot be drawn through the susceptor **30** and the heating element **4** extends across both sides of the housing **10**, the insulator **40** comprises separate projections **41** of insulator material extending from the heating element **4** towards to the interior edges of the housing **10** in order to define the air flow path through the article **1**. FIG. **6**B shows another example where the susceptor **30** of the heating element **4** has a solid cylindrical shape without a cavity, and the insulator **40** surrounds the outer diameter of the susceptor **30** but does not extend to the article housing **10**, further reducing the risk of damaging the housing **10** from heating.

[0053] The configuration of the heating elements **4** allow them to be fabricated separately to an aerosol generating article **1** and easily incorporated into existing article **1** manufacturing processes. This includes high-speed article **1** manufacturing processes such as a linear combining process.

[0054] The exact method of fabricating the heating elements **4** will depend on their intended configuration. For example, a long tube of susceptor material could be coated or over moulded with insulator material and subsequently cut into individual heating elements **4** where the outer diameter of the susceptor **30** is covered by an insulator **40** but the first end **31** and second end **32** of the susceptor **30** are left uncovered and exposed. In a similar but alternative example, the same long tube of susceptor material is cut into individual susceptor **30** components that are subsequently coated or over moulded with insulator material to form the heating elements **4**. This technique is preferable when a heating element **4** with an insulator **40** that fully encapsulates the susceptor **30** is desired.

[0055] An example process of manufacturing an aerosol generating article **1** according to the present invention comprises feeding the substrate **20** onto a continuous web of the housing **10** in an unwrapped state. If the finished article **1** is intended to comprise other components such as a filter **3** or mouthpiece then these are also fed onto the housing **10** web. After the substrate **20** is disposed on the web, the heating elements **4** are inserted onto the housing **10** web, separating portions of substrate **10**. Preferably, cavities are created in the substrate **20** in order to define a space for the heating element **4** to be inserted. When all the interior components of the article **1** have been arranged on the housing **10** web, the housing **10** web is wrapped around the interior components to securely enclose them within the housing **10**, forming a continuous rod. The continuous rod is cut into individual rods. In some examples the individual rods may be the finished aerosol generating articles **1** while in other examples the individual rods are further processed (e.g. a second wrapping is applied or laser perforation is applied to a filter of the individual rod).

1. An aerosol generation article comprising:

a housing,

a substrate arranged within the housing, the substrate configured to generate an aerosol when heated;

at least one heating element arranged within the housing and adjacent the substrate;

wherein each heating element comprises:

a susceptor; and

an insulator, wherein the insulator comprises a solid insulator material;

wherein the susceptor and the insulator, with the insulator at least partially surrounding the susceptor and contacting the susceptor, are configured such that, in use, when an electromagnetic field is applied by an aerosol generation device, the heating element heats the adjacent substrate without damaging the housing of the article.

2. The article of claim **1**, wherein the article is an elongate shape such that an article axis is defined between two longitudinally opposing ends of the article.

3. The article of claim **2**, wherein the susceptor comprises a first end and a second end, and the heating element is arranged within the housing such that the first end and the second end are axially aligned along the article axis.

4. The article of claim **3**, wherein the insulator surrounds the susceptor such that the first end and the second end of the susceptor are exposed by the insulator.

5. The article of claim **1**, wherein the insulator fully encapsulates the susceptor.

6. The article of claim **1**, wherein the susceptor is a cylindrical tube shape.

7. The article of claim **6**, wherein a thickness of the tube walls is between 50 μm and 150 μm.

8. The article of claim **1**, wherein the insulator is substantially the same shape as the susceptor.

9. The article of claim **1**, wherein the insulator comprises a plurality of projections of insulator material extending from the heating element.

10. The article of claim **9**, wherein the plurality of projections extend from the heating element perpendicularly to a longitudinal axis of the article.

11. The article of claim **1**, wherein an outer diameter of the heating element is between 5 mm and 8 mm.

12. The article of claim **1**, wherein a length of the heating element is greater than or equal to 6 mm.

13. The article of claim **1**, wherein the at least one heating element comprises a plurality of heating elements.

14. The article of claim **13**, wherein the plurality of heating elements are axially aligned with a longitudinal axis of the article and sequentially arranged along a length of the article, and wherein the substrate is arranged between adjacent heating elements.

15. An aerosol generation system comprising:

the aerosol generation article of claim **1**; and

an aerosol generation device comprising a heating chamber and at least one induction coil;

wherein, in use, the device is configured to receive the article in the heating chamber such that the induction coil is aligned with the susceptor.

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