In one aspect, there is provided a composition comprising nicotine and one or more tobacco-derived compounds, wherein the one or more tobacco-derived compounds are obtained by a process comprising condensing a gas stream employed in a tobacco expansion process comprising the tobacco-derived compounds to form a condensate, and fractionating the condensate to selectively recover or enrich the one or more tobacco-derived compounds.

In another aspect, there is provided an aerosol-generating composition for use in a heated aerosol-generating smoking device, comprising a composition described herein.

In another aspect, there is provided a method comprising: volatilizing one or more tobacco-derived compounds into a gas stream; recovering a composition comprising at least one of the one or more volatilized constituents or reaction products from the gas stream; and fractionating the composition to selectively recover or enrich at least one of the one or more volatilized constituents or reaction products.

In another aspect, there is provided a method for preparing an aerosol-generating composition for use in a heated aerosol-generating smoking article, comprising: formulating the composition described herein with one or more aqueous composition comprising nicotine, propylene glycol, glycerol or a combination of at least two of the foregoing substance.

One object of the present disclosure is to recover tobacco flavorants that are volatilized during tobacco processing. Such compounds are typically lost, or their content is reduced, with current tobacco processing methods. Another object is to provide compositions for use in heated aerosol-generating articles, which compositions include tobacco flavorants recovered during tobacco processing. The tobacco flavorants may provide flavor, aroma, or other sensory attributes to the compositions. Other objects of the present disclosure will be evident to those of skill in the art upon reading and understanding the present disclosure, which includes the claims that follow and accompanying drawings.

In one embodiment, the present disclosure provides a composition comprising nicotine and one or more tobacco flavorants, wherein the one or more

tobacco flavorants are obtained by condensing a gas stream comprising the one or more tobacco flavorants. The gas stream can be a gas stream employed in a tobacco expansion process. Preferably, the gas stream is a waste gas stream from a tobacco expansion process. In some embodiments, at least some, and preferably all, of the nicotine in the composition is also obtained by condensation of the gas stream. The compositions may be, or may form a portion of, an aerosol-generating composition for use in heated aerosol-generating smoking articles.

In another embodiment, the present disclosure provides a composition comprising nicotine, one or more tobacco flavorants, and at least one compound selected from the group of humectants, aerosol-forming agents, and other compounds of an aerosol-generating composition for use in a heated aerosol-generating smoking article, wherein the composition is produced by recovering at least some of the nicotine and the one or more tobacco flavorants by condensing a gas stream containing the nicotine and the one or more tobacco flavorants and formulating the condensate with at least one compound selected from the group of humectants, aerosol-forming agents, and other compounds of an aerosol-generating composition for use in a heated aerosol-generating smoking article.

As used herein, "formulating" means adjusting concentration of components, such as nicotine, flavorants and humectants, to levels that meet tobacco control regulations and produce an acceptable experience to adults when used in an aerosol-

generating device. Any composition described herein for use in an aerosol-generating device may be a formulated composition.

In various aspects of the present disclosure, a method is provided that includes volatilizing one or more tobacco-derived compounds into a gas stream and recovering at least one of the one or more volatilized tobacco-derived compounds from the gas stream by techniques well known in the art. Optionally, the method includes fractionating the recovered compounds by techniques well known in the art. Preferably at least one of the recovered tobacco-derived compounds is a tobacco flavorant. Volatilizing the tobacco-derived compounds may be done by raising the temperature of the tobacco in a tobacco expansion process, such as but not limited to a dry ice expansion tobacco ("DIET") process.

In various aspects of the present disclosure, a method is provided for preparing an aerosol-generating composition for use in heated aerosol-generating device, that includes recovering a tobacco flavorant from a gas stream, and adding the recovered tobacco flavorant to a composition including water and nicotine. The composition preferably includes polyethylene glycol, humectants or other suitable aerosol-forming agent.

In some aspects of the present disclosure, a method is provided for preparing an aerosol-generating composition for use in a heated aerosol-generating device that includes recovering a tobacco flavorant and nicotine from a gas stream, and adding the recovered tobacco flavorant and nicotine to a composition including water. The composition preferably includes polyethylene glycol, humectants or other suitable aerosol-forming agent.

Various aspects of the methods and compositions of the present disclosure may have one or more advantages relative to currently available tobacco processing and processes for forming aerosol-generating compositions for use in heated aerosol-generating devices. For example, aspects of methods of the present disclosure recover tobacco flavorants, which may include key flavor compounds, during tobacco expansion processes rather than losing or burning such compounds as done with current tobacco expansion processes. Additional advantages of one or more aspects of smoking articles, compositions or methods described herein will be evident to those of skill in the art upon reading and understanding the present disclosure.

The methods of the disclosure may be employed with any tobacco expansion process that results in volatilization of tobacco flavorants. As used herein, a "tobacco flavorant" is a tobacco-derived compound that produces an odor or flavor when smelled or tasted. A "tobacco-derived compound" is a compound naturally occurring in tobacco or a reaction product of naturally occurring tobacco compounds that may be generated during processing of tobacco. The tobacco-derived compounds, which may include tobacco flavorants, volatilized in a tobacco expansion process may be carried in a gas stream. Tobacco flavorants may be recovered from the gas stream and used to provide odor, aroma, flavor, or other sensory attributes to various compositions.

Volatilization of tobacco-derived compounds can result from raising the temperature of a composition comprising tobacco. However, volatilization can occur without heating, and volatilized compounds may be captured in accordance with the methods of the present invention. Volatilized tobacco-derived compounds may be captured and recovered from any suitable composition comprising tobacco constituents, such as dry tobacco compositions, tobacco suspensions, and the like. Preferably, volatilized tobacco-derived compounds are captured in a gas stream from which the compounds may be recovered. The volatilized compounds may be recovered in any suitable manner, such as by condensation, by affinity, and the like. One or more tobacco flavorants volatilized in the gas stream may be selectively recovered, enriched, or both selectively recovered and enriched in one or more steps.

In various embodiments, the methods of the disclosure include subjecting a composition comprising tobacco to conditions that result in volatilization of a tobacco-derived compound into a gas stream, and recovering the tobacco-derived compound from the gas stream. The conditions to which the tobacco composition is subjected, in part, determines whether a tobacco-derived compound will be volatilized. It will be understood that temperature, gas stream flow rate, and pressure can affect the amount of a tobacco-derived compound that is volatilized into the gas stream. The same factors can also affect the number of different compounds that are volatilized into the gas stream. The vapor pressure of a tobacco-derived compound also contributes to whether the tobacco-derived compound will be volatilized under a given set of conditions.

CLAIMS:

1. A composition comprising nicotine and one or more tobacco-derived compounds, wherein the one or more tobacco-derived compounds are obtained by a process comprising condensing a gas stream employed in a tobacco expansion process comprising the tobacco-derived compounds to form a condensate, and fractionating the condensate to selectively recover or enrich the one or more tobacco-derived compounds.

2. A composition according to claim 1, wherein the one or more tobacco-derived compounds are obtained by condensing a gas stream that is employed in a dry ice tobacco expansion process.

3. A composition according to any one of claims 1-2, wherein the one or more tobacco-derived compounds in the gas stream are generated from tobacco by volatilization at a temperature at between about 150°C and about 400°C.

4. A composition according to any one of claims 1-3, wherein the one or more tobacco-derived compounds in the gas stream are obtained by treating tobacco that is impregnated with non-gaseous carbon dioxide with a gas stream comprising steam, at a temperature at between about 150°C and about 400°C, thereby volatizing the one or more tobacco-derived compounds.

5. A composition according to any one of claims 1-4, wherein the one or more tobacco-derived compounds are obtained by condensing the gas stream in more than one stage at different temperature ranges and forming more than one condensate.

6. A composition according to any one of claims 1-5 wherein one or more of the tobacco-derived compounds is a terpene, a tobacco alkaloid, or an alkylpyrazine.

7. A composition according to any one of claims 1-6 wherein the process further comprises subjecting a condensate comprising the one or more tobacco-derived compounds to fractionation.

8. A composition according to any one of claims 1-7 wherein one or more of the tobacco-derived compounds that is obtained in one or more condensates by the process is selected from the group consisting of α-pinene, β-pinene, α-terpinene, limonene, eucalyptol, linalool, camphor, borneol, citronellol, β-caryophyllene, l-nicotine, l-myosmine, nicotyrine, cotinine, 3-cyanopyridine, 2-methyl-pyrazine, 2-ethyl-pyrazine, 2,3-dimethyl-pyrazine, 6-ethyl-2-methyl-pyrazine, trimethyl-pyrazine, 2-ethyl-5-methyl-pyrazine, and dimethyethyl-pyrazine.

9. An aerosol-generating composition for use in a heated aerosol-generating smoking device, comprising a composition according to any one of claims 1-8.

10. The aerosol-generating composition according to claim 8 or claim 9, wherein the composition further comprises propylene glycol and glycerol.

11. A method comprising:

volatilizing one or more tobacco-derived compounds into a gas stream;

recovering a composition comprising at least one of the one or more volatilized constituents or reaction products from the gas stream; and

fractionating the composition to selectively recover or enrich at least one of the one or more volatilized constituents or reaction products.

12. A method according to claim 11, wherein volatilizing the one or more tobacco-derived compounds into the gas stream comprises heating tobacco impregnated with non-gaseous carbon dioxide by a gas stream comprising steam in a tobacco expansion process.

13. A method according to any of claims 11-12, wherein recovering the at least one of the one or more volatilized compounds comprises condensing the gas stream at one or more temperature ranges.