Claims

1. A device for collecting an air sample comprising:
    a. a means for collecting aerosols and particles from ambient air, and
    b. a means for collecting Volatile Organic Compounds (VOC's) from ambient air,

    wherein the means for collecting aerosols and particles and the means for collecting VOC's from ambient air are connected to each other such that the device collects from the same volume of ambient air aerosols, particles and VOC's.

2. A device for capturing a breath sample from human breath comprising:
    a. a means for collecting aerosols and particles from human breath, and
    b. a means for collecting Volatile Organic Compounds (VOC's) from human breath,

    wherein the means for collecting aerosols and particles and the means for collecting VOC's from human breath are connected to each other such that the device collects from the same volume of exhaled human breath aerosols, particles and VOC's.

3. The device according to claim 1 or 2, wherein the means for collecting aerosols and particles comprises a filter to capture such aerosols and particles.

4. The device according to claim 3, wherein the filter is an electrostatic filter.

5. The device of any of the preceding claims, wherein the means for collecting aerosols and particles and the means for collecting VOC's are connected through a gas-tight connection.

6. The device according to any of the preceding claims, wherein the means for collecting VOC's comprises a thermal desorption tube.

7. The device according to claim 6, wherein the thermal desorption tube comprises a honeycomb structure.

8. The device according to claim 7, wherein the honeycomb structure is made from any material which is capable of resisting temperatures of 450°C or more.

9. The device according to claim 7, wherein the honeycomb structure comprises adsorbent material.

10. The device according to claim 9, wherein the honeycomb structure is coated with one or more adsorbent materials.

11. A method of sampling ambient air with the device according to any of the preceding claims.

12. A method of sampling human breath with the device according to any of claims 2 to 10.

13. A method to determine the presence of a biomarker of interest in a sample of exhaled human breath or ambient air comprising
    a. collecting aerosols and particles from human breath or ambient air,
    b. collecting Volatile Organic Compounds (VOC's) from human breath or ambient air, and
    c. determining the presence of the biomarker of interest in either one of the collected aerosols, particles or VOC's,

    wherein the aerosols, particles and VOC's are collecting from the same exhaled human breath or same volume of ambient air and are collected in a single device according to any of claims 1 to 10.

14. A method of diagnosing a patient for having or having a risk of having a disorder comprising determining the presence of a biomarker of interest comprising
    a. collecting aerosols and particles from human breath,
    b. collecting Volatile Organic Compounds (VOC's) from human breath, and

c. determining the presence of the biomarker of interest in either one of the collected aerosols, particles or VOC's,

wherein the aerosols, particles and VOC's are collecting from the same exhaled human breath in a single device according to any of claims 2 to 10.