

The invention claimed is:

1. A method of detecting a disease agent in a patient sample, the method comprising:
generating, using an IR spectrometer, a sample infra-red spectrum representative of the patient sample without drying the sample, the sample spectrum having one or more spectral components, each component having a wavenumber and absorbance value;
subtracting a corresponding water blank intensity value from the absorbance value for the wavenumber of each component, wherein the water blank intensity value is measured using the IR spectrometer;
providing a computer with a reference database of spectral models, each model having one or more database spectral components of a wavenumber and an absorbance value, wherein the database spectral components identify disease agents;
using the computer to determine whether the reference database has one or more database spectral components corresponding to one or more sample spectral components;
compiling and depicting a list of corresponding database components identified on a display screen.
2. The method according to claim 1, wherein providing a reference database of spectral models further comprises selecting one or more spectral windows and wherein determining whether the reference database has one or more database spectral components comprises comparing the selected one or more spectral windows against the reference database.
3. The method according to claim 1, which further comprises determining the number of sample components in each respective spectral model compiled and ranking said compiled spectral model.
4. The method according to claim 1, which further comprises determining the number of sample components in each respective spectral model compiled and classifying said compiled spectral model based on predetermined classification criteria.
5. The method according to claim 1, wherein the disease agent is chosen from the group comprising blood borne viral diseases.
6. The method according to claim 1, wherein the disease agent is chosen from the group comprising human immune deficiency virus (HIV), hepatitis B virus (HBV), hepatitis C

virus (HCV), viruses of the family Arenaviridae (including Lassa fever, Junin and Machupo), viruses of the family Bunyaviridae (including Crimean-Congo haemorrhagic fever, Rift Valley Fever, Hantaan haemorrhagic fevers), viruses of the family Filoviridae (Ebola and Marburg) and viruses of the family Flaviviridae (yellow fever, dengue, Omsk haemorrhagic fever, Kyasanur forest disease, West Nile virus), viruses or vectors of the Alphaviridae, Babesia B. divergens, B. bigemina, B. equi, B. microfti, B. duncani, Leishmania Toxoplasma gondii, Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale curtisi, Plasmodium ovale wallikeri, Plasmodium malariae, Plasmodium knowlesi, Trypanosoma brucei and Trypanosoma cruzi.

7. The method according to claim 1, wherein the database spectral components identify a specific hepatitis virus chosen from hepatitis A, hepatitis B, hepatitis C, hepatitis D, hepatitis E, hepatitis G or combinations thereof.
8. The method according to claim 1, wherein the infra-red spectrum representative of the patient sample is created from a thick film of a blood sample.
9. The method according to claim 1, wherein the infra-red spectrum representative of the patient sample is created from a single droplet of blood.
10. A method according to claim 9, wherein the infra-red spectrum representative of the patient sample is created from a single droplet of blood of volume between 5 and 50 μl or between 5 and 25 μl .
11. The method of claim 1, further comprising measuring a water blank with a sample volume of water that is equal to the sample volume of the patient sample, to generate the corresponding water blank intensity value from the absorbance value for the wavenumber of each component.
12. The method of claim 1, wherein the patient sample is a whole blood sample, and further comprises lysing red blood cells in the whole blood sample.
13. A method of detecting malaria in a patient sample, the method comprising:
creating a sample infra-red spectrum representative of the patient sample by using

an IR spectrometer, the sample spectrum having one or more spectral components, each component having a wavenumber and absorbance value;

subtracting a corresponding water blank intensity value from the absorbance value for wavenumber of each component, wherein the water blank intensity value is measured using the IR spectrometer;

providing a reference database of spectral models, each model having one or more database spectral components of a wavenumber and an absorbance value, wherein the database spectral components identify malaria;

determining whether the reference database has one or more database spectral components corresponding to one or more sample spectral components; and

compiling and depicting a list of corresponding database components identified on a display screen.

14. The method according to claim 13, wherein the infra-red spectrum representative of the patient sample is created from a thick film of a blood sample.

15. The method according to claim 13, wherein the infra-red spectrum representative of the patient sample is created from a single droplet of blood.

16. A method according to claim 15, wherein the infra-red spectrum representative of the patient sample is created from a single droplet of blood of volume between 5 and 50 μl .

17. The method of claim 16, wherein the single droplet of blood has a volume between 5 and 25 μl .

18. The method according to claim 13, wherein the database spectral components identify a specific phase of malaria.

19. The method according to claim 13, wherein the database spectral components identify one or more Plasmodium species.

20. The method according to claim 19, wherein the database spectral components identify one or more Plasmodium species chosen from the group comprising Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale curtisi, Plasmodium ovale wallikeri, Plasmodium malariae, Plasmodium knowlesi or combinations thereof.

21. A computer readable storage medium for storing in non-transient form an application for executing a method of detecting a disease agent in a patient sample, comprising:

- (i) recording an IR spectrum representative of the patient sample using an IR spectrometer,
- (ii) subtracting water blank intensity values from the recorded IR spectrum, wherein the water blank intensity values were measured using the IR spectrometer;
- (iii) comparing said spectrum to a reference database of spectral models to identify one or more spectral components of wavenumber and absorbance of the patient sample, wherein the spectral components identify disease agents, and
- (iv) compiling and depicting a list of sample components identified corresponding to a respective spectral model of the database on a display screen, wherein steps (i) to (iv) are automated.

22. A system for detecting a disease agent in a patient sample, the system comprising a spectrometer for capture of an IR spectrum and a computer, wherein

- (i) the spectrometer is configured to generate an IR spectrum representative of the patient sample,
- (ii) the computer is configured to subtract water blank intensity values from the spectrum and apply the spectrum to a reference database of spectral models to identify one or more spectral components of wavenumber and absorbance of the patient sample, wherein the spectral components identify disease agents, and
- (iii) the computer is further configured to compile a list of one or more sample components identified corresponding to a respective spectral model of the database.