CLAIMS

1. A method for a non-invasive determination and/or monitoring of intracranial compliance of a biological material, comprising the steps of:

a) performing an acoustic spectroscopy of the biological material, several acoustic transmitting signals of different frequencies and/or amplitudes being emitted into the biological material and corresponding reflected and/or transmitted acoustic receiving signals of different frequencies and/or amplitudes being received after having passed through the biological material, and the biological material being a human or an animal skull; and

b) comparing acoustic transmitting signals with corresponding acoustic receiving signals, characteristics for the biological material and time-of-flight values being determined; and

c) determining an expansion of the biological material, a linear expansion and/or a volume expansion of the biological material being measured and wherein the acoustic spectroscopy and/or the determination of the expansion of the biological material are essentially carried out in a direction of frontal plane of the skull, slightly above external ear canal, and

d) determining the intracranial compliance of the biological material based on the comparisons drawn in step b) and the measurement carried out it step c).

2. The method according to claim 1,

wherein the method additionally comprises the steps of:

e) determining an intracranial pressure, a cerebral blood flow and/or a pathological condition of the biological material based on the intracranial compliance determined in step d).

3. The method according to claim 1 or 2, wherein the method additionally comprises the steps of:

f) displaying the determination carried out in step d) and/or in step e).

4. The method according to any one of the claims 1 to 3, wherein the acoustic transmitting signals are emitted at a first position of the biological material and wherein the acoustic receiving signals are received at a second position of the biological material, and wherein the first and second position are identical or disposed opposite each other.

5. The method according to any one of the claims 1 to 4, wherein the acoustic spectroscopy and/or the determination of the expansion of the biological material are essentially carried out in the area of left and right cerebrum and longitudinal cerebral fissure.

6. The method according to any one of the claims 1 to 5, wherein the characteristics for the biological material include at least one of composition, mixture concentration, distribution, and chemical composition.

7. A device for a non-invasive determination and/or monitoring of intracranial compliance of a biological material according to any one of the preceding method claims,

having a first means for performing an acoustic spectroscopy of the biological material, wherein the first means comprises an acoustic transmitting element for transmitting several acoustic transmitting signals of different frequencies and/or amplitudes into the biological material and an acoustic receiving element for receiving corresponding reflected and/or transmitted acoustic receiving signals of different frequencies and/or amplitudes after having passed through the biological material and wherein the biological material is a human or animal skull;

having an evaluation unit for comparing acoustic transmitting signals with corresponding acoustic receiving signals, wherein characteristics for the biological material, and time-of-flight values are determinable;

having a second means for determining an expansion of the biological material, wherein the second means comprises a measuring device for measuring a linear expansion and/or a volume expansion of the biological material and wherein the acoustic spectroscopy and/or the determination of the expansion of the biological material are essentially carried out in a direction of frontal plane of the skull, slightly above external ear canal; and

having an analysis unit for determining the intracranial compliance of the biological material based on the comparisons drawn and the measurement carried out.

8. The device according to claim 7, wherein the analysis unit is configured to determine an intracranial pressure, a cerebral blood flow and/or a pathological condition of the biological material based on the determined intracranial compliance.

9. The device according to claim 7 or 8, wherein an output unit for displaying the determination carried out by means of the analysis unit is comprised.

10. The device according to any one of the claims 7 to 9, wherein the acoustic transmitting element is disposed at a first position of the biological material and wherein the acoustic receiving element is disposed at a second position of the biological material and wherein the first and the second position are identical or disposed opposite each other.

11. The device according to any one of the claims 7 to 10, wherein the acoustic spectroscopy and/or the determination of the expansion of the biological material are essentially carried out in the area of left and right cerebrum and longitudinal cerebral fissure.

12. The device according to any one of the claims 7 to 11, wherein the characteristics for the biological material include at least one of composition, mixture concentration, distribution, and chemical composition.

13. The device according to any one of the claims 7 to 12, wherein the first means, the second means, the evaluation unit, the analysis unit and/or the output unit are disposed in one component.

14. The device according to any one of the claims 7 to 13, wherein the device is realized so as to be rotatable and/or moveable.