

**[0014]** According to a first aspect of the present invention, there is provided a disposable cartridge for insertion into a sample analyzer, the disposable cartridge comprising a housing including a sample analysis unit for engaging with the sample analyzer and a sample extraction unit for extracting a sample from a sample collection unit and transferring said sample to the sample analysis unit, the sample extraction unit being coupled to the sample analysis unit by a flexible connection, wherein one of the sample analysis unit and the sample extraction unit is flexibly connected to the housing.

**[0015]** The flexible coupling between the sample analysis unit and the sample extraction unit together with the flexible connection ensures that forces exerted upon the part of the disposable cartridge external to the sample analyzer when inserted therein are at least partially absorbed by the flexible coupling and the flexible connection, thus reducing the forces on the connection between the part of the disposable cartridge inserted into the sample analyzer and the sample analyzer itself.

**[0016]** The sample collection unit may be a separate element to be inserted into the disposable cartridge or may form a part thereof, in which case the sample collection unit is mounted in the sample extraction unit. In an embodiment, the sample collection unit comprises a porous material for collecting a bodily fluid, and wherein the sample extraction unit is arranged to compress the porous material to extract the bodily fluid from said material. For instance, the bodily fluid may be saliva, in which case the sample collection unit may be a porous swab.

**[0017]** In an embodiment, the sample analysis unit is flexibly connected to the housing such that the housing as a whole may be flexibly connected to the sample analysis unit.

**[0018]** The housing may comprise a pair of inner grooves for receiving the sample analysis unit, and wherein the sample analysis unit comprises respective portions for insertion into said grooves, wherein the width of said grooves exceeds the thickness of said portions such that said portions do not fit tightly into said grooves. This has the advantage that said portions have some degree of translational freedom inside said grooves, such that small movements of the housing are not automatically transferred to the connection between the sample analysis unit and the sample analyzer. The sample analysis unit may comprise a carrier having a substantially constant thickness, said carrier comprising said respective portions.

**[0019]** In an alternative embodiment, the sample analysis unit is flexibly connected to the sample extraction unit by a flexible member comprising a pair of rings separated by a flexible membrane, wherein the rings are in intimate, i.e. fluid-tight, contact with the sample extraction unit and the sample analysis unit respectively. This further improves the flexibility of the mounting of the sample analysis unit in the disposable cartridge.

**[0020]** In a further embodiment, the housing may comprise a mating member for engaging with a complementary mating member of the sample analyzer to improve the robustness of the connection of the disposable cartridge with the sample analyzer.

**[0021]** In accordance with a further aspect of the present invention, there is provided a sample analyzer for analyzing the sample in the sample analysis unit of the disposable cartridge having the mating member, wherein the sample analyzer comprising a chamber for receiving the sample analysis unit, said chamber comprising the complementary mating member.

**[0022]** In a preferred embodiment, the opposite mating member comprises a pair of flexibly mounted ball bearings for mating with a pair of recesses in the housing of the disposable cartridge, said ball bearings at least partially protruding into the chamber. This has the advantage that the ball bearings fixate the housing of the disposable cartridge in a well-defined position, thus guaranteeing the accuracy of the sample measurement performed by the sample analyzer. This is particularly advantageous if the sample analyzer further comprises an optical analysis unit, wherein the sample analysis unit of the disposable cartridge comprises an optically accessible window, wherein the ball bearings are arranged to align the optically accessible window with the optical analysis unit when mating with said pair of recesses.

**[0023]** In an embodiment, the ball bearings are spring-mounted, and wherein the sample analyzer further comprises a pair of nuts for adjusting the spring force exerted onto the respective ball bearings such that the user of the sample analyzer can adjust the amount of grip pressure between the sample analyzer and the disposable cartridge, for instance to ensure that the disposable cartridge can be released from the sample analyzer without requiring excessive force.

**[0024]** In a further embodiment, the sample analyzer is designed to receive a disposable cartridge having a sample analysis unit comprising a carrier having a substantially constant thickness, wherein the sample analyzer comprises a gripping member for gripping an end portion of said carrier when the disposable cartridge is fully inserted into the chamber. This further improves the security of the connection between the disposable cartridge, in particular the sample analysis unit and the sample analyzer. In a preferred embodiment, the gripping member comprises a support for supporting said end portion and a spring-loaded pressing member for pressing said end portion onto said support.

**[0025]** The disposable cartridge and the sample analyzer of the present invention may be combined to form a system of the present invention.

#### BRIEF DESCRIPTION OF THE EMBODIMENTS

**[0026]** Embodiments of the invention are described in more detail and by way of non-limiting examples with reference to the accompanying drawings, wherein

**[0027]** FIGS. 1 and 2 schematically depict a disposable cartridge;

**[0028]** FIG. 3 schematically depicts the outer design of a disposable cartridge;

**[0029]** FIG. 4 schematically depicts a sample analyzer with an inserted disposable cartridge;

**[0030]** FIG. 5 schematically depicts a disposable cartridge in accordance with an embodiment of the present invention;

**[0031]** FIG. 6 schematically depicts a disposable cartridge in accordance with another embodiment of the present invention;

**[0032]** FIG. 7 schematically depicts an aspect of a disposable cartridge in accordance with yet another embodiment of the present invention;

**[0033]** FIG. 8 schematically depicts another aspect of the disposable cartridge of FIG. 7;

**[0034]** FIG. 9 schematically depicts an aspect of a disposable cartridge applicable to several embodiments of the present invention;

**[0035]** FIG. 10 schematically depicts an aspect of a sample analyzer in accordance with an embodiment of the present invention;