oxide (ITO) which includes tin as a dopant, tin oxide (ATO) which includes antimony as a dopant, and tin oxide (FTO) which includes fluorine as a dopant. The conductive layer is formed, for example, by a film formation method according to the type of the material for forming the conductive layer.

[0086] On the other hand, in the detection chip which is used for the oxidation reduction current/electrochemiluminescence detection method to be described later, the working electrode body **61** is composed of a conductive material.

[0087] The conductive material is the same as that used for the conductive layer of the working electrode body **61** in the detection chip to be used for the photoelectrochemical detection method.

[0088] The conductive material may be a composite base material in which a conductive material layer composed of a material having conductivity is formed on the surface of a nonconductive base material composed of nonconductive substances such as glass and plastics. The shape of the conductive material layer may be filmy or spot-like.

[0089] In this case, the thickness of the working electrode body **61** is preferably from 1 to 1000 nm, more preferably from 10 to 200 nm.

[0090] The trapping substances **81** or **281** are immobilized on the surface of the working electrode body **61** [see FIGS. **5** and **22**]. A trapping substance **81** or **281** is a substance which traps the analyte. Accordingly, the analyte is allowed to be present near the working electrode body **61**. The trapping substance **81** or **281** can be appropriately selected depending on the type of the analyte. Examples of the trapping substance **81** or **281** include nucleic acids, proteins, peptides, sugar chains, antibodies, and nanostructures with specific recognition ability.

[0091] The counter electrode **66** is formed on the substrate body **40***a* as shown in FIGS. **5** and **22**. The counter electrode **66** is composed of a thin film of a conductive material. Examples of the conductive material include metals such as gold, silver, copper, carbon, platinum, palladium, chromium, aluminum, and nickel or an alloy containing at least one of those metals; conductive ceramics such as ITO and indium oxide; metal oxides such as ATO and FTO; and titanium compounds such as titanium, titanium oxide, and titanium nitride. The thickness of the thin film composed of a conductive material is preferably from 1 to 1000 nm, more preferably from 10 to 200 nm.

[0092] The reference electrode **69** is formed on the substrate body **40***a* as shown in FIGS. **5** and **22**. The reference electrode **69** is composed of a thin film of a conductive material. Examples of the conductive material include metals such as gold, silver, copper, carbon, platinum, palladium, chromium, aluminum, and nickel or an alloy containing at least one of those metals; conductive ceramics such as ITO and indium oxide; metal oxides such as ATO and FTO; and titanium compounds such as titanium, titanium oxide, and titanium nitride. The thickness of the thin film composed of a conductive material is preferably from 1 to 1000 nm, more preferably from 10 to 200 nm. Although the reference electrode **69** is formed in the present embodiment, it is not necessary to form the reference electrode **69** in the present invention. Depending on the type and film thickness of the electrode to be used for the counter electrode **66**, when a small current (e.g. 1 μA or less) to be less affected by the voltage drop influences is measured, the counter electrode **66** may serve as the reference electrode **69**. On the other hand, when measuring a large current, it is preferable to form the reference electrode **69** from the viewpoint of suppressing voltage drop influences and stabilizing a voltage to be applied to the working electrode **60**.

[0093] Subsequently, the spacing member **50** will be explained. The spacing member **50** is formed into a rectangular-circular shape and is composed of silicone rubber which is an insulating material. The spacing member **50** is arranged so as to surround the working electrode **60**, the counter electrode **66**, and the reference electrode **69** [see FIGS. **4**A, **5**, and **22**]. A space corresponding to the thickness of the spacing member **50** is formed between the upper substrate **30** and the lower substrate **40**. Thus, a space **20***a* for housing a sample and an electrolytic solution is formed among the electrodes (the working electrode **60**, the counter electrode **66**, and the reference electrode **69**) [see FIGS. **4**A, **5**, and **22**]. The thickness of the spacing member **50** is usually from 0.2 to 300 μm. In the present invention, in place of silicone rubber, a double-sided plastic tape such as a polyester film can also be used as the material for forming the spacing member **50**.

[0094] In the present invention, the working electrode **60**, the counter electrode **66**, and the reference electrode **69** may be arranged in a frame of the spacing member **50** so as not to bring the electrodes into contact with other electrodes. Therefore, the working electrode **60**, the counter electrode **66**, and the reference electrode **69** may be formed on the same substrate body. In the present invention, the counter electrode **66** and the reference electrode **69** may not be a film-like electrode formed on the substrate body. In this case, at least one of the counter electrode **66** and the reference electrodes 69 may be formed on the member body of the spacing member **50**. The electrodes other than the electrode formed on the member body of the spacing member **50** may be formed on either the upper substrate **30** or the lower substrate **40**.

First Embodiment

[Method for Electrochemically Detecting Analyte]

[0095] The method for electrochemically detecting an analyte of the present invention according to the first embodiment is a method for electrochemically detecting an analyte comprising:

[0096] (1) bringing a sample containing an analyte into contact with a working electrode on which a trapping substance for trapping the analyte is immobilized to allow the analyte to be trapped by the trapping substance on the working electrode;

[0097] (2) forming a complex containing the analyte trapped by the trapping substance on the working electrode obtained by the process (1) and a label binding substance in which a labeling substance and a binding substance trapping the analyte are at least retained by a support composed of polypeptide; and

[0098] (3) electrochemically detecting the labeling substance present on the working electrode obtained by the process (2).

[0099] A major characteristic of the method for electrochemically detecting an analyte according to the first embodiment of the present invention is that polypeptide is used as a support of the labeling substance.

[0100] In the method for electrochemically detecting an analyte according to the first embodiment of the present invention, for example, a label binding substance in which a binding substance to be bound to the analyte S is linked to