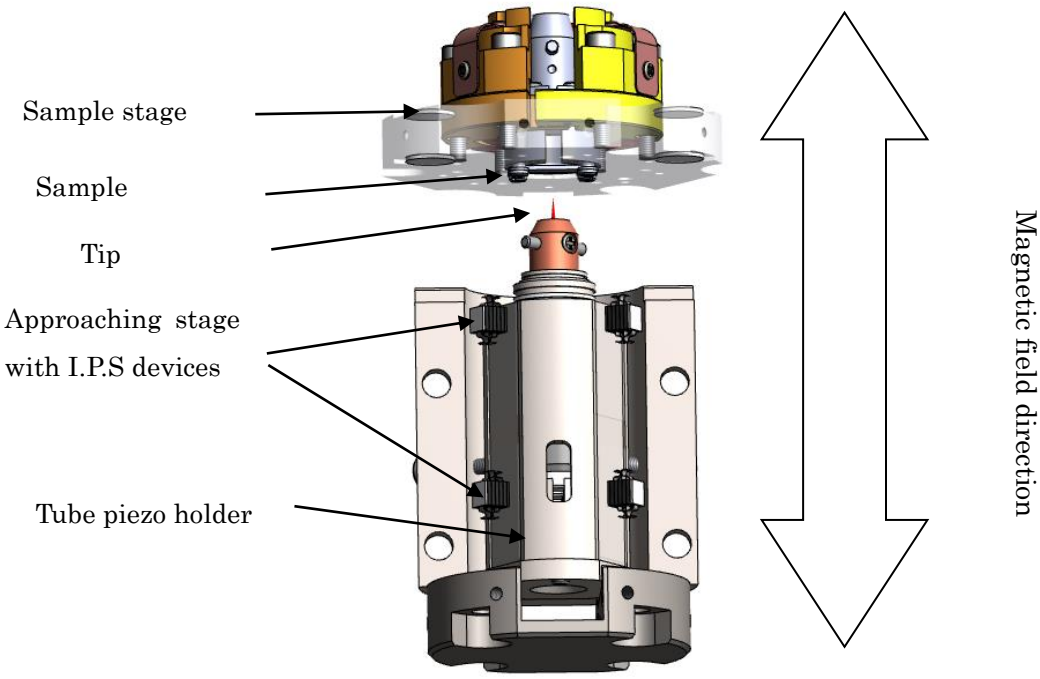

Fig. 2.2 The main components of Approach

2-1-5 Sample holder

In this STM system, two kinds of sample holder are designed for two different mechanism of annealing treatments, one is an electron bombardment (EB) annealing treatment and the other is a direct current (DC) annealing treatment.

The EB holder has 6 electrodes at a glance, but electrically 3 electrodes because the top and bottom electrodes are connected each other ("a", "b", "c"). See Fig 2.3. The EB sample holder has a tungsten filament inside. The tungsten filament is placed between "b" and "c" thus the filament current has to be applied on between them. Regarding the high voltage, it is supposed to be applied on "a" which is separated from "b" and "c". Before EB annealing process is performed on the heating stage in the preparation chamber, ensure that the electrode "a" is heading to the upside and "b" and "c" are heading to the lower side, otherwise EB heating does not work (Fig.2.3). Fig 2.3 is the correct appearance when it is loaded.

In case of the DC sample holder, as the top and bottom electrodes are electrically separated so this is truly 6 electrodes ("a", "b", "c", "d", "e", "f"). Normally the sample should be placed to connect between "b" and "c". The Electrodes "d", "e", "f" is not connected in the initial state. If you want to use them, you need to make the wires between the electrodes and the sample surface directly in order to make electrical connections. Before DC annealing process is performed on the heating stage in the preparation chamber, ensure that the

electrode “d” (or a) is heading to the upside and “e” and “f” are heading to the lower side, otherwise DC heating does not work. The sample should look like horizontal (Fig 2.4). This is the correct appearance.

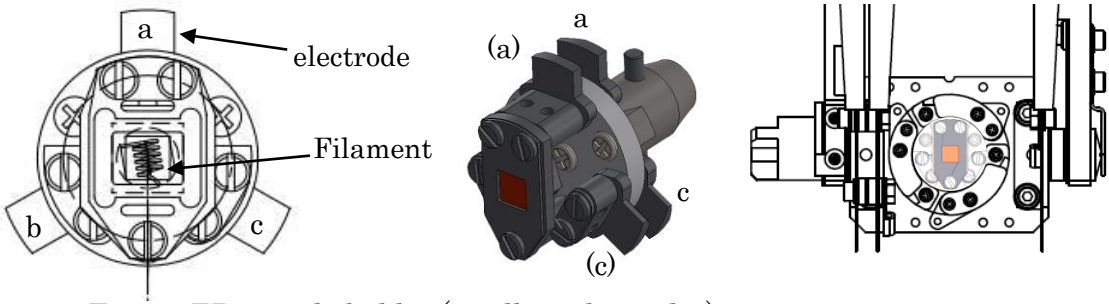

Fig 2.3 EB sample holder (totally 3 electrodes)

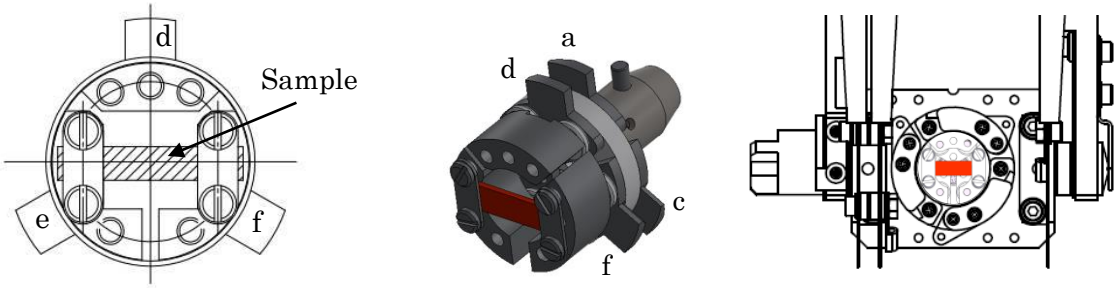

Fig 2.4 DC sample holder (totally 6 electrodes)

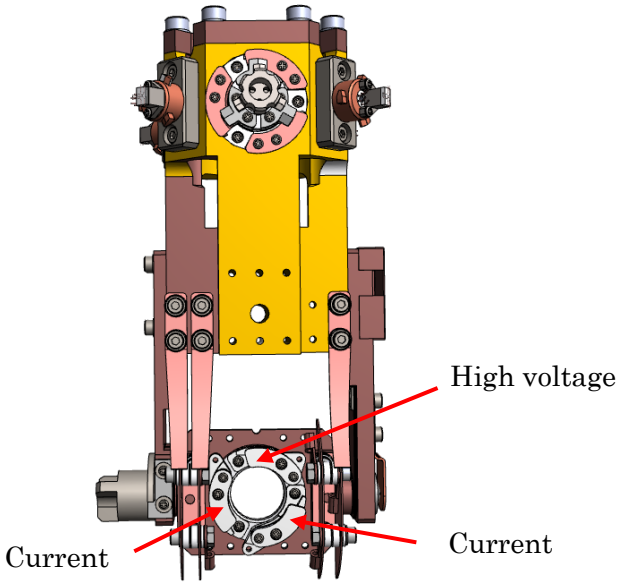

Fig 2.5 Heating stage in Preparation chamber