



The Abdus Salam
International Centre for Theoretical Physics



2168-Presentation

**Joint ICTP-IAEA Workshop on Dense Magnetized Plasma and Plasma
Diagnostics**

15 - 26 November 2010

The DPF Presentation

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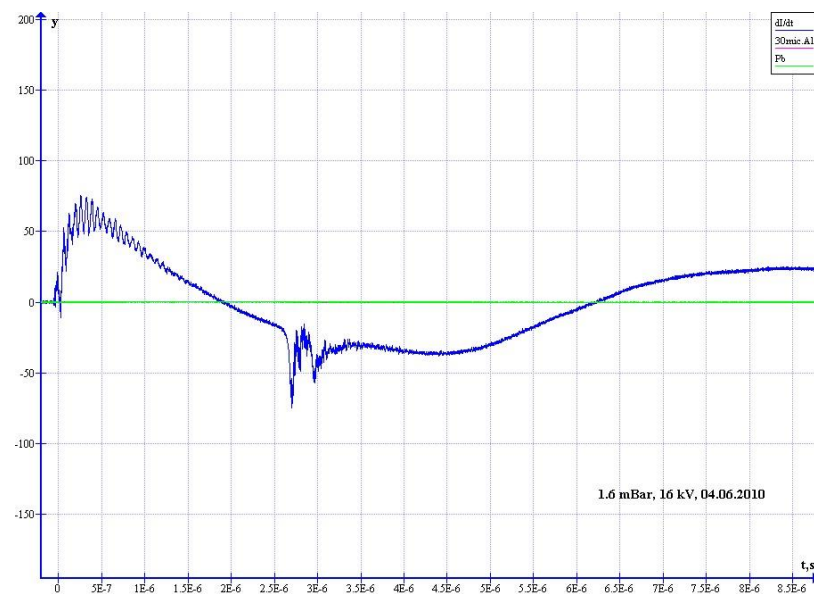
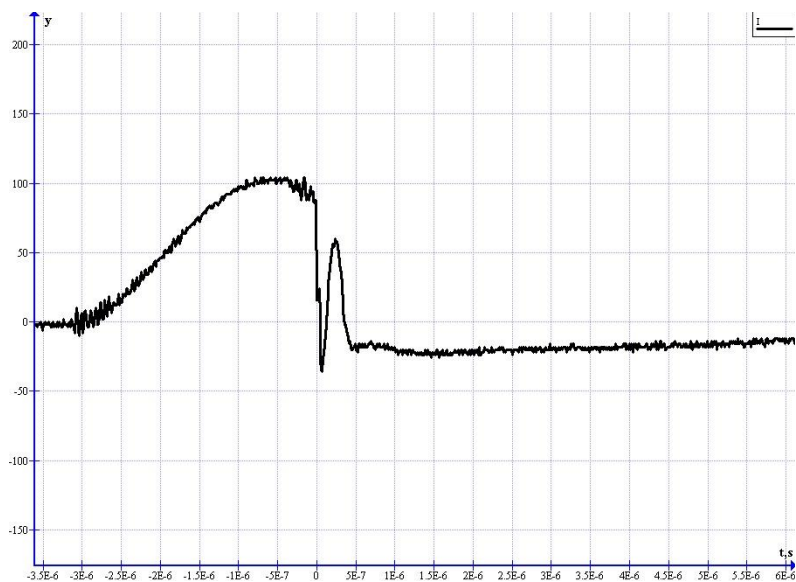
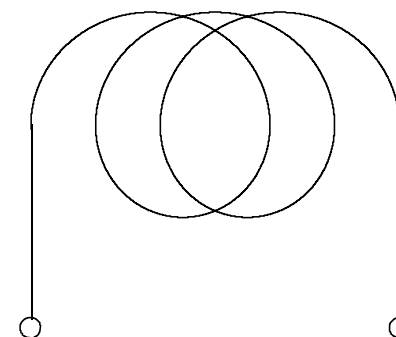
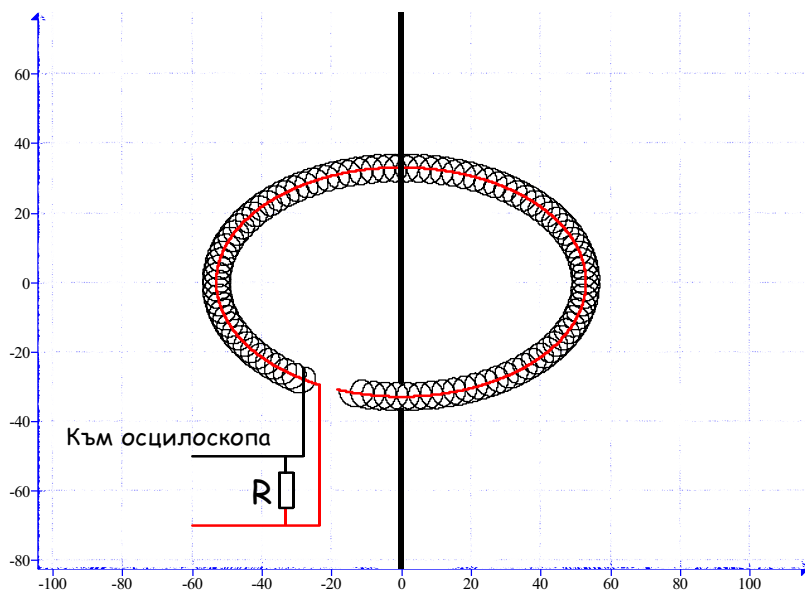


The DPF in the University of Sofia – news from the year 2010

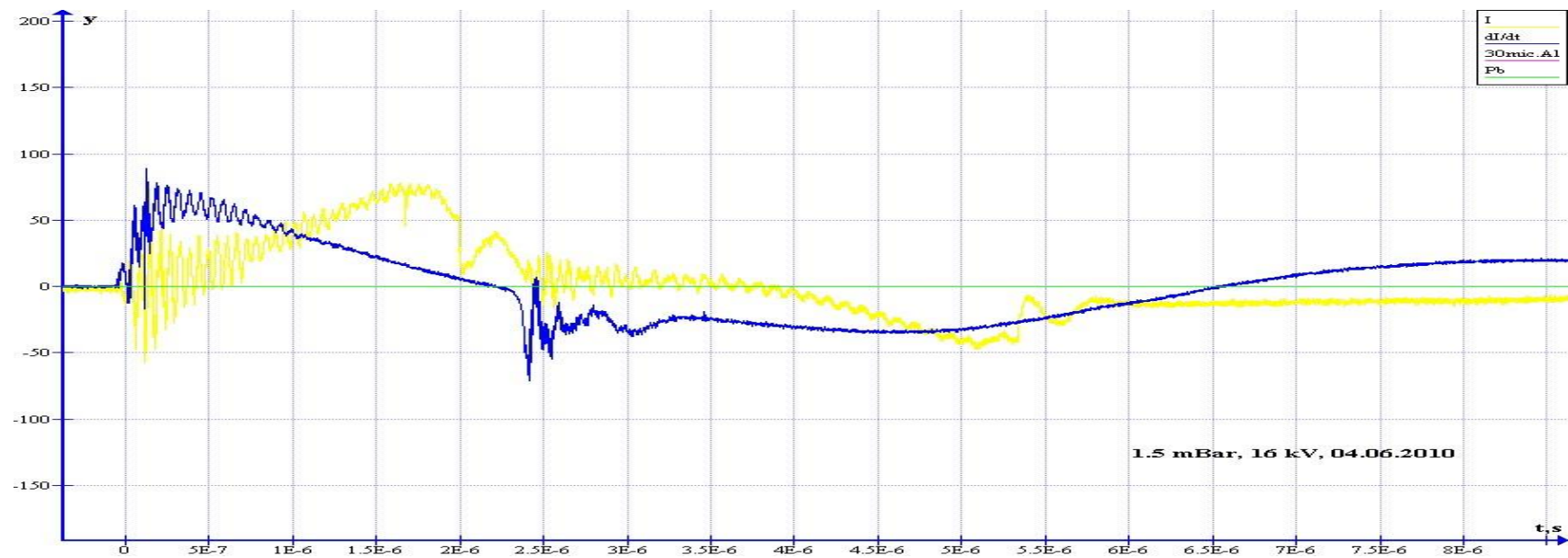


S. Zapryanov, A. Blagoev, V. Yordanov

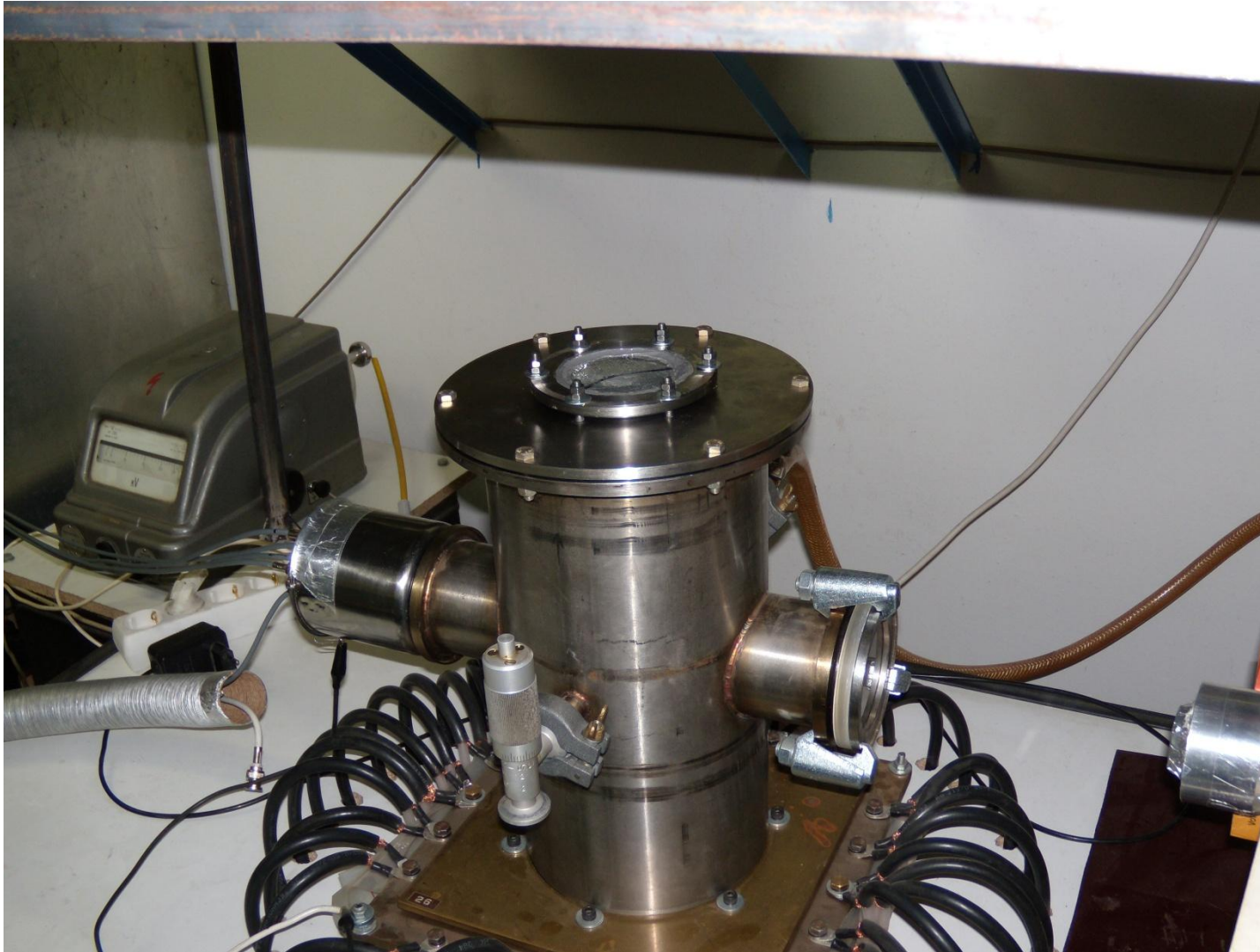
Current through discharge and its time derivative



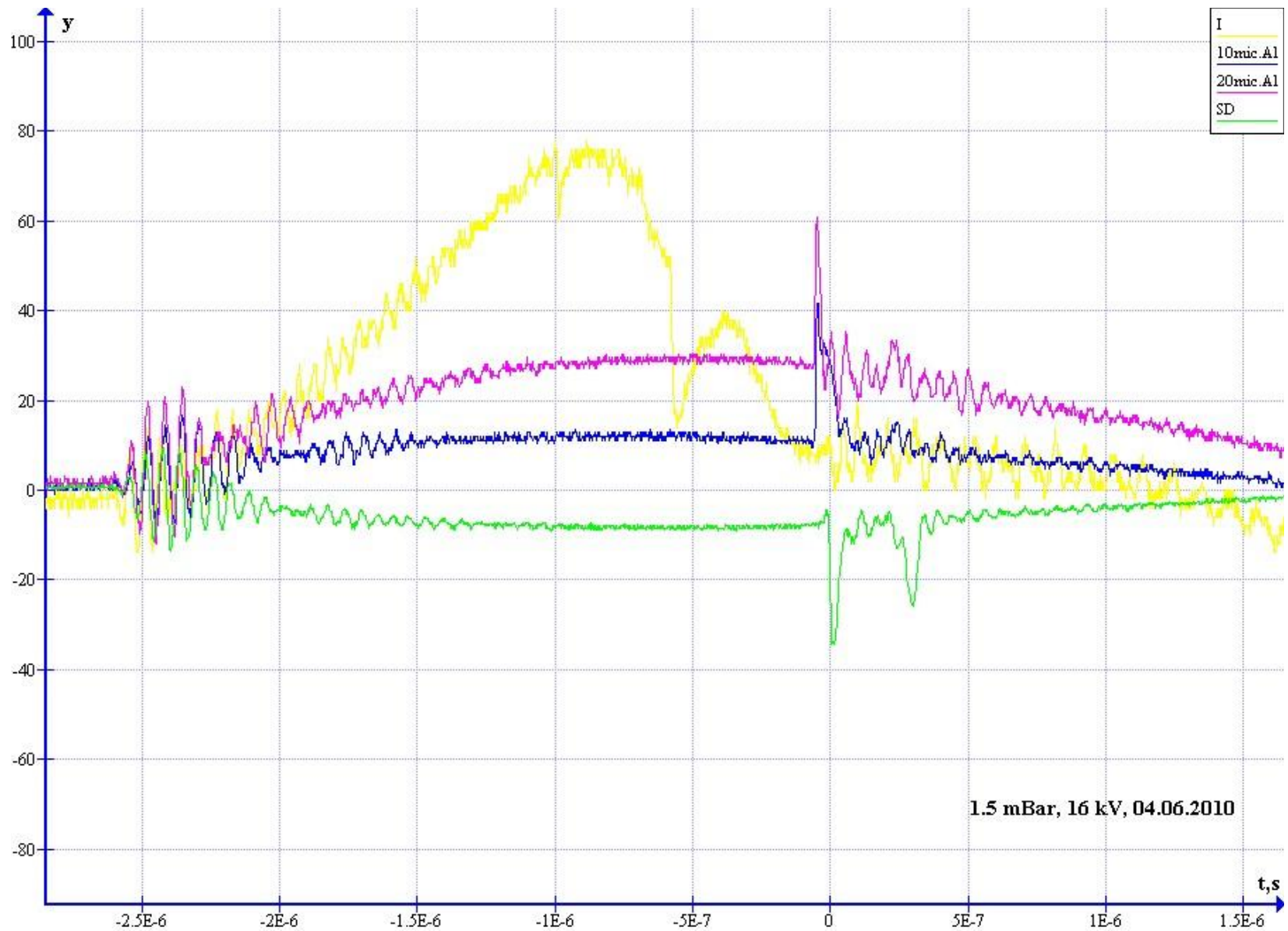
... and more



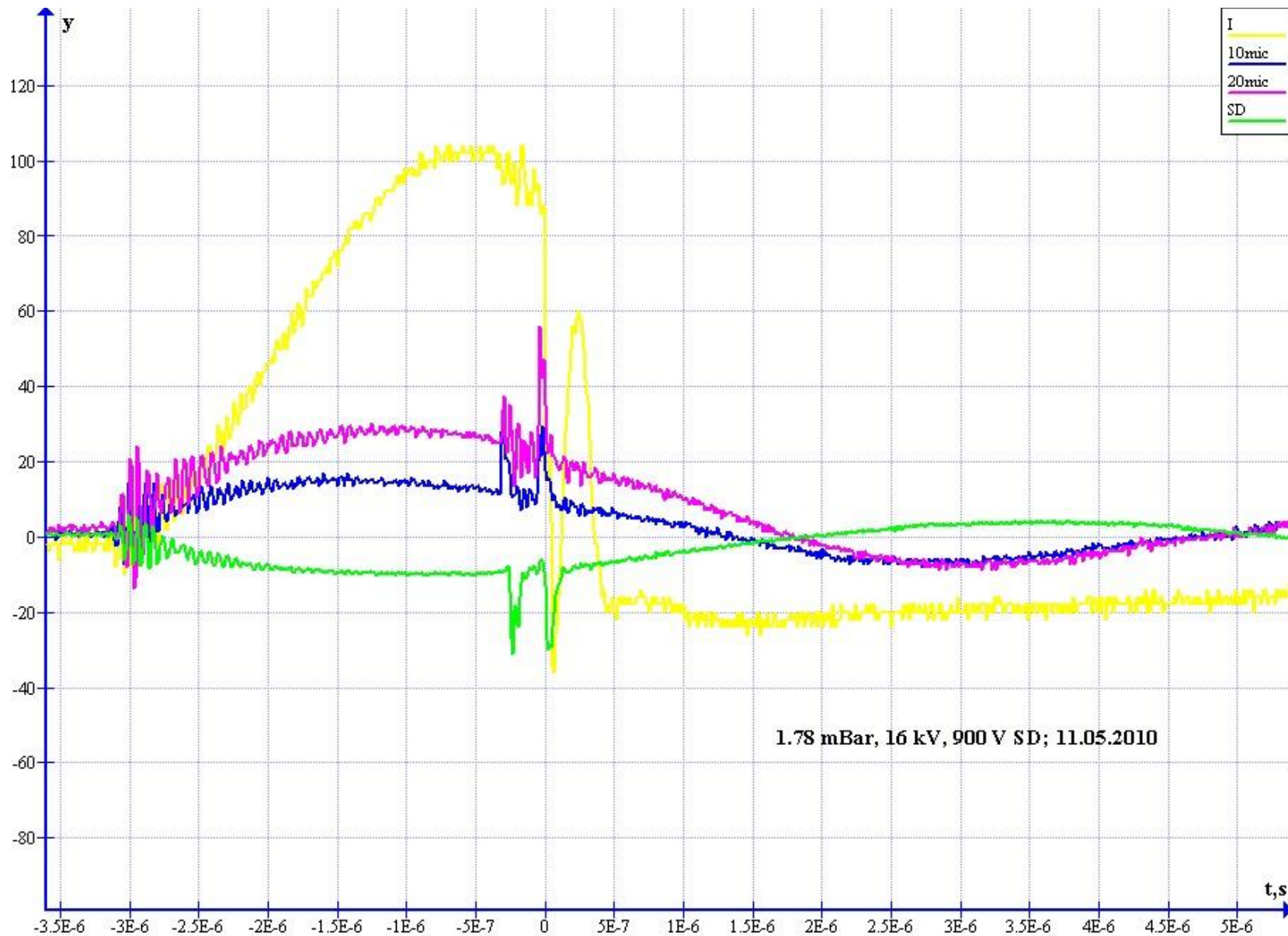
Vacuum chamber and X – ray detectors; dish for irradiation of samples with X - ray



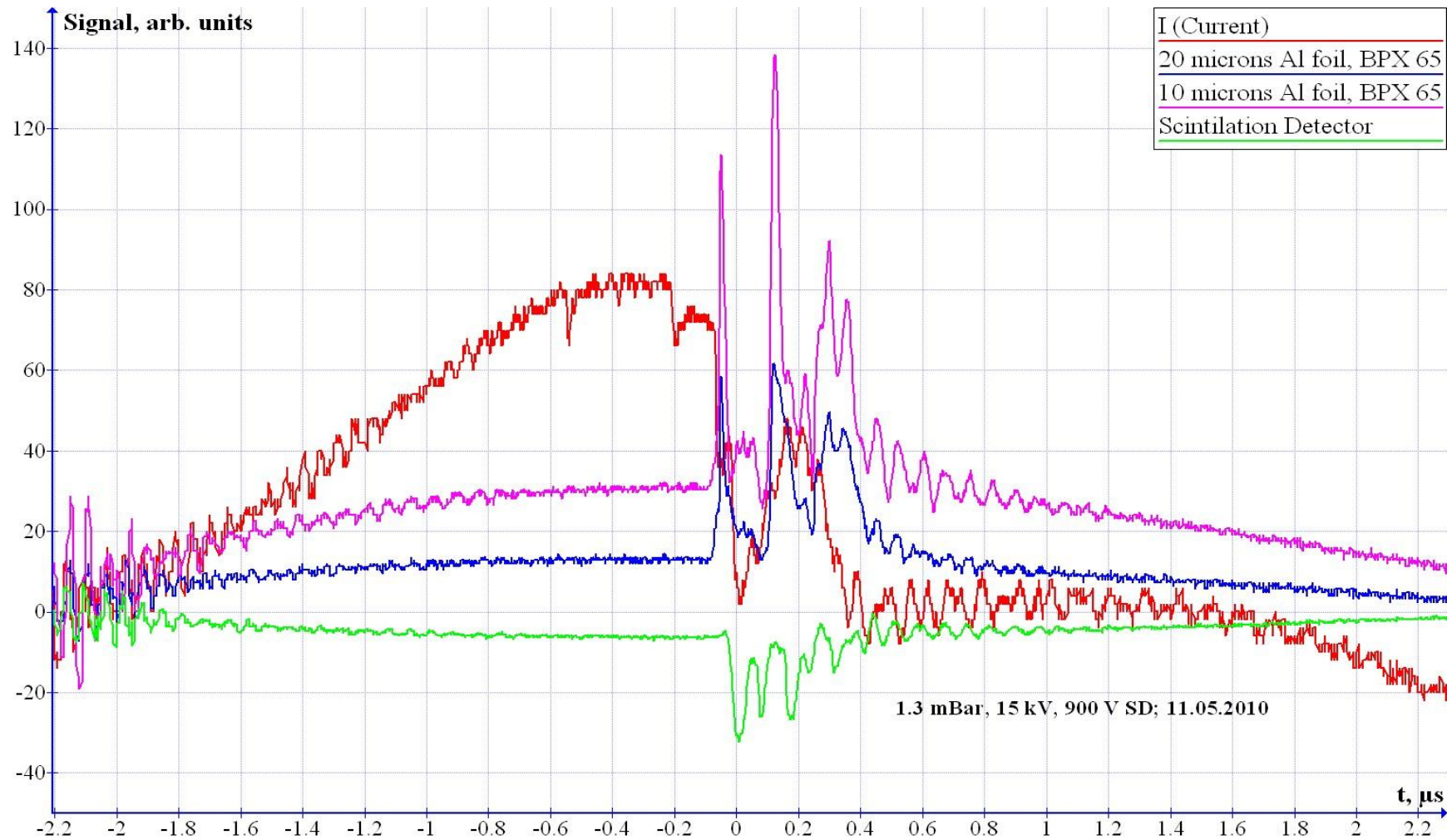
Typical oscilloscope graphs of the signals from X – ray detectors 1/3



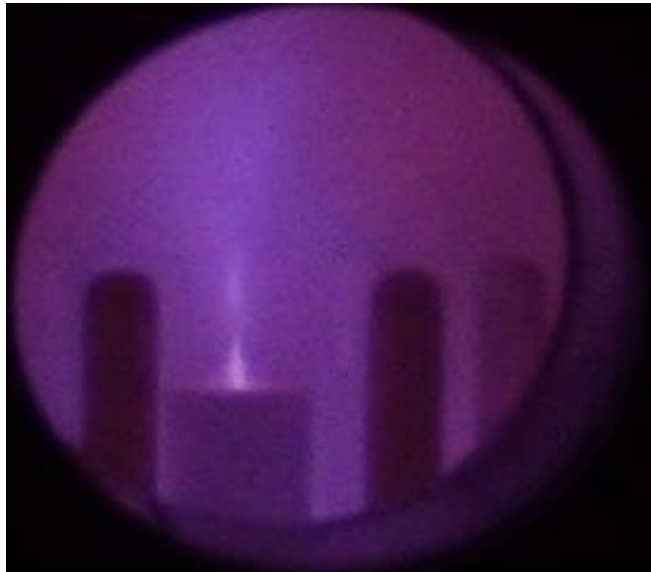
Typical oscilloscope graphs of the signals from X – ray detectors 1/3



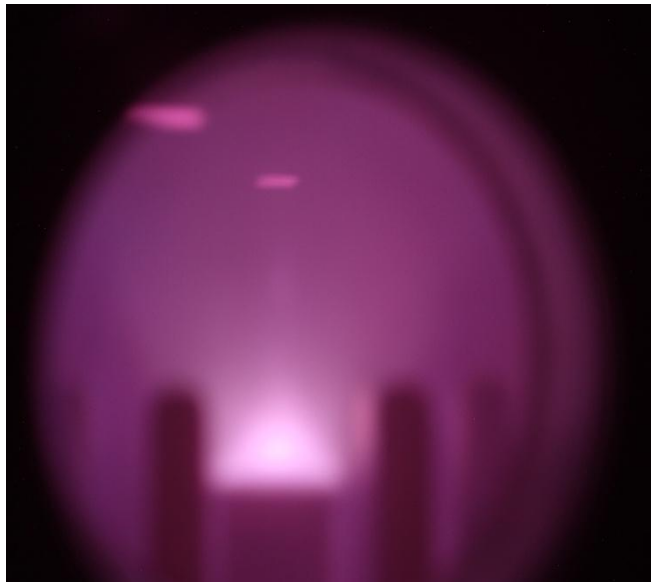
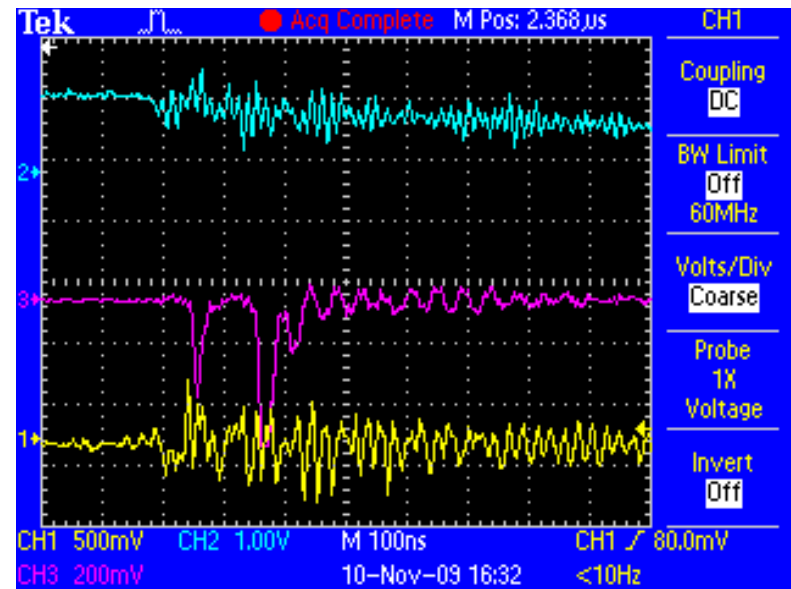
Typical oscilloscope graphs of the signals from X – ray detectors 1/3



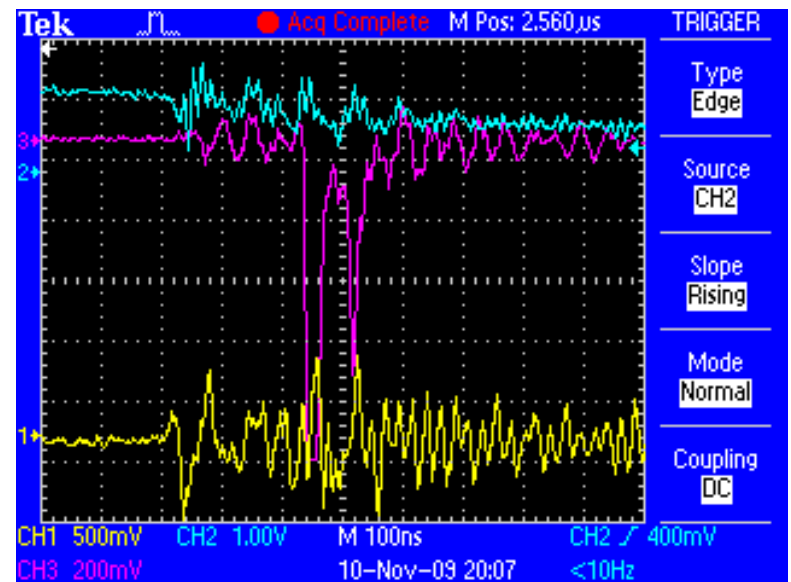
Origin of X – rays in the device



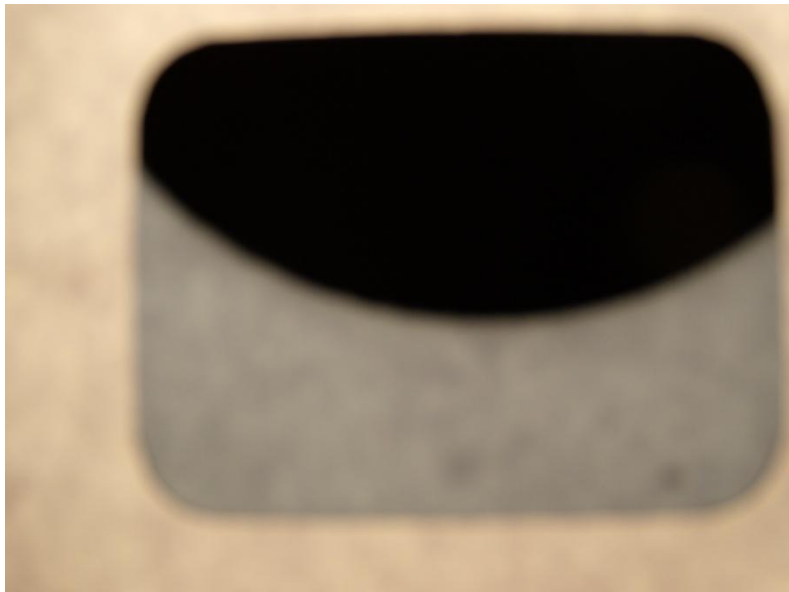
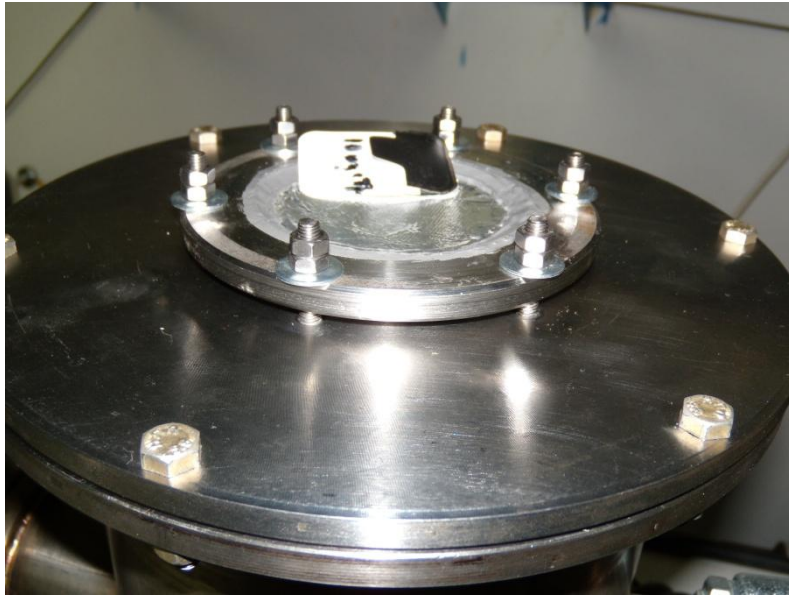
Hollow anode



Solid – ended
anode

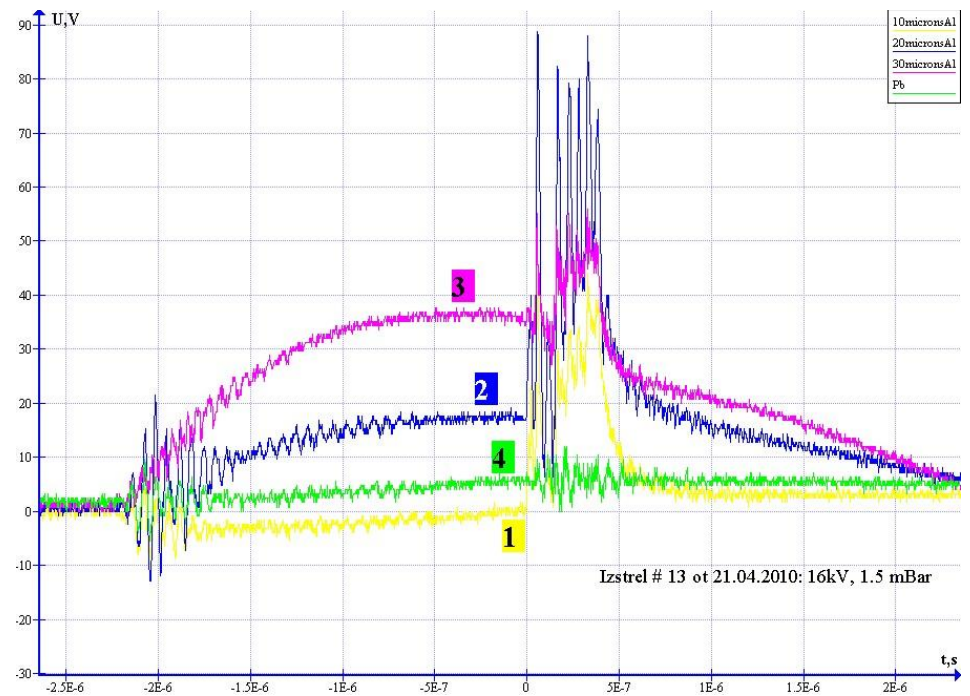


Dish for irradiation of biological and other samples with soft X – ray

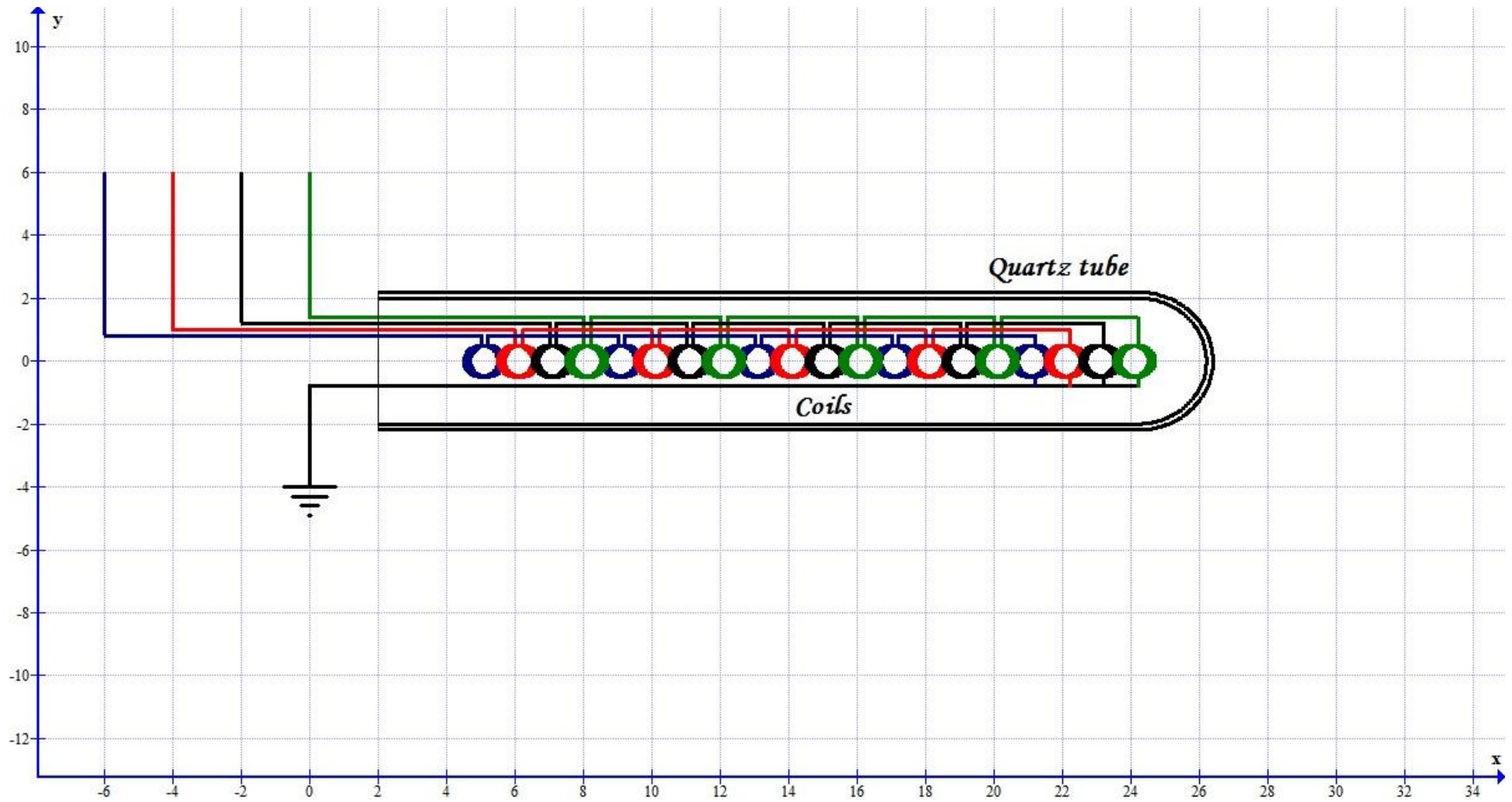


A number of biological experiments were conducted in order to test the survival of the yeast *Kluyveromyces Marxianus* under soft X-ray radiation and to explore the enzyme function of the survived organisms. The survival was about 90 percent after 10 shots under the following conditions: $P=1.6$ mBar, $U=16$ kV.

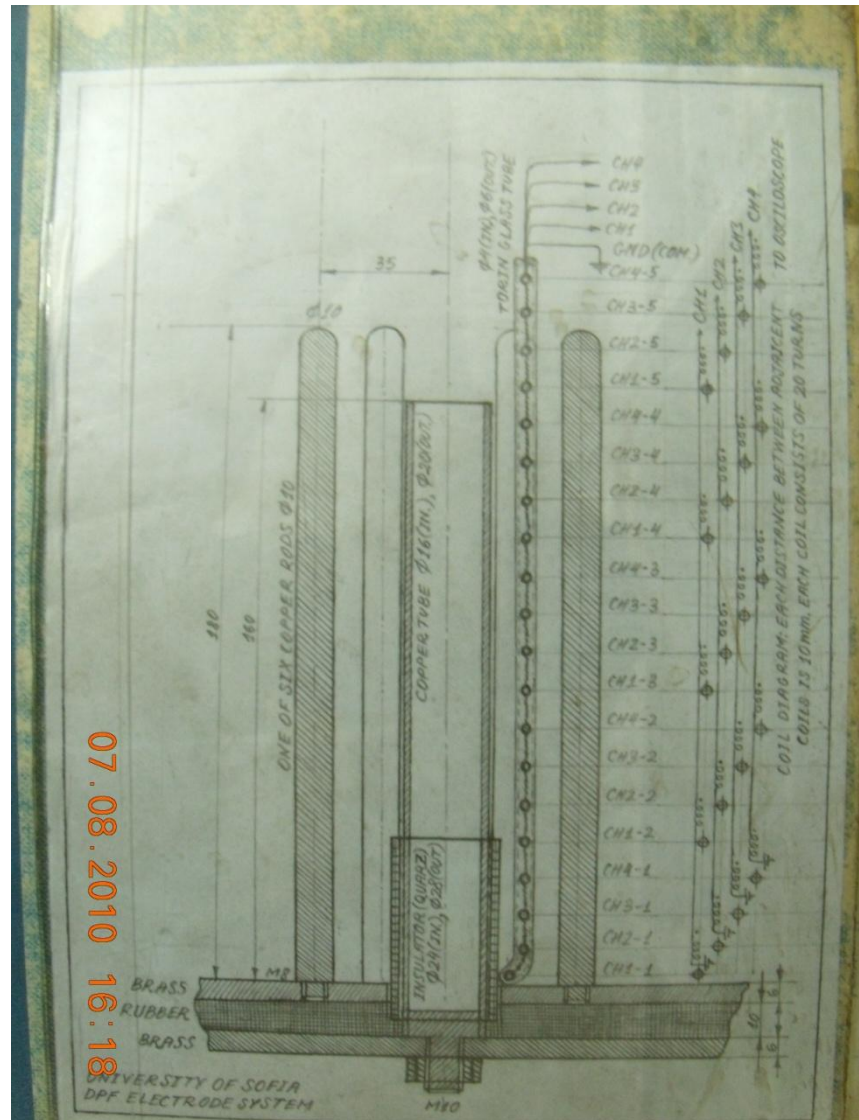
Recording the time evolution of soft X - ray



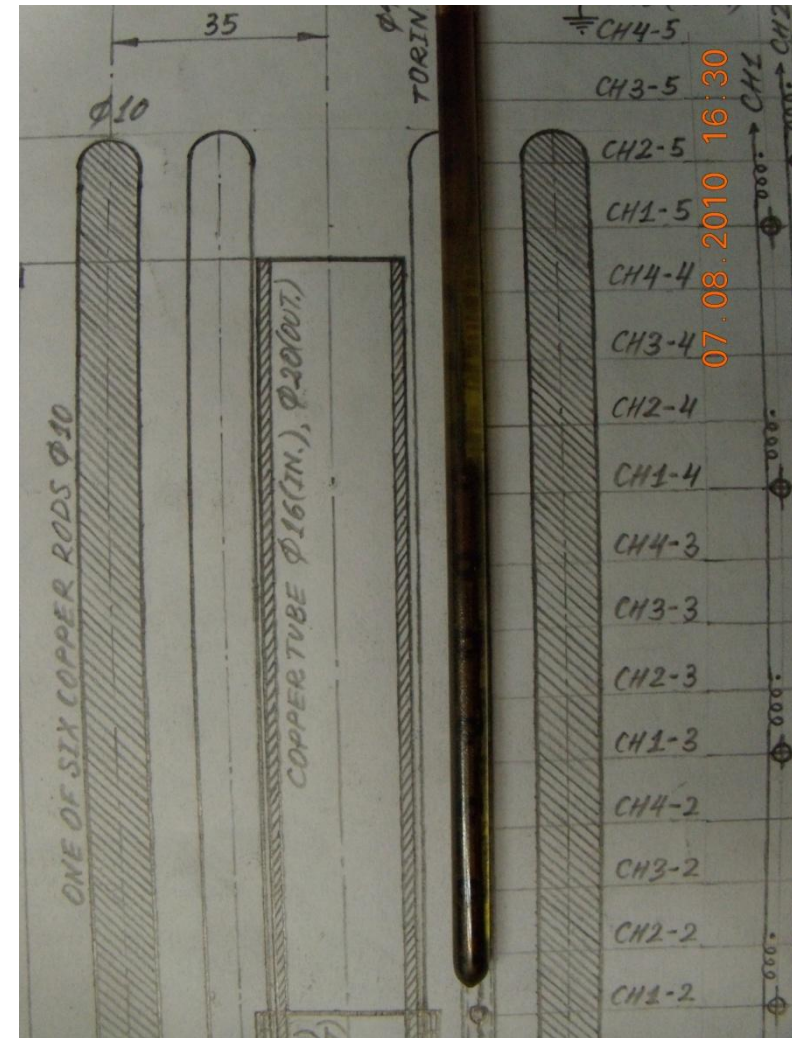
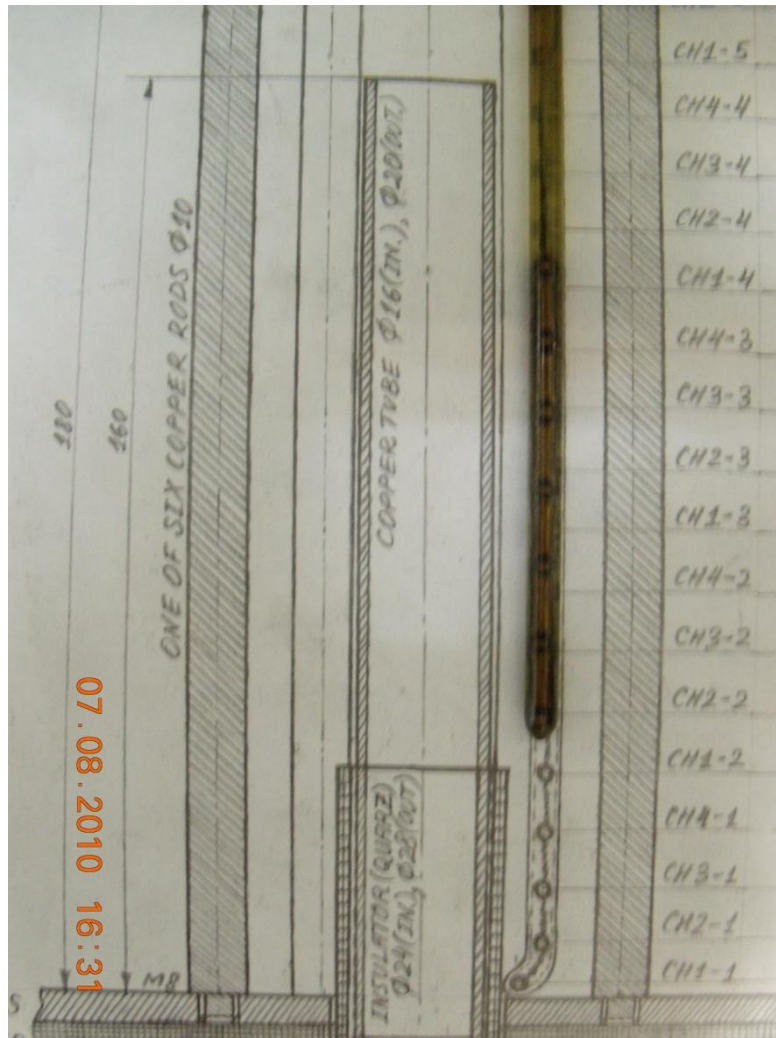
Schematics of our 20 magnetic probe coil system



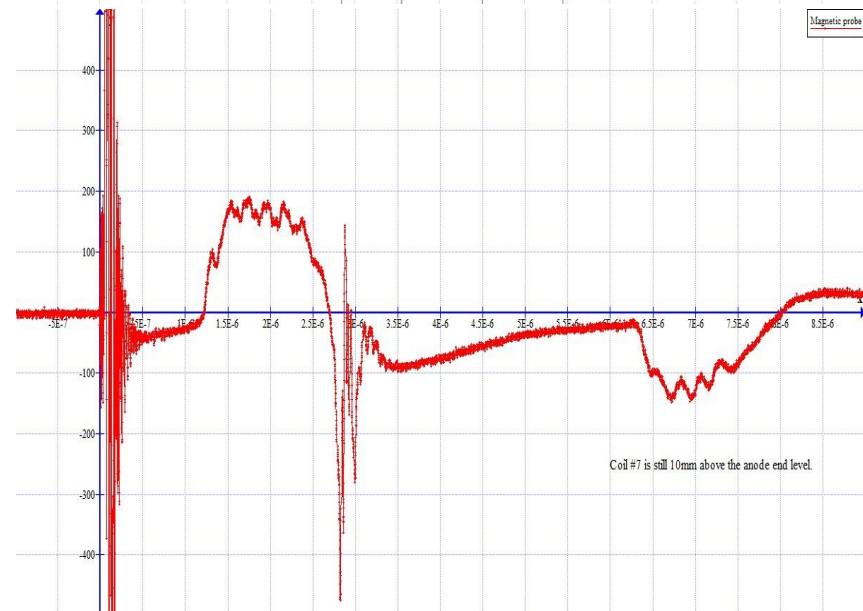
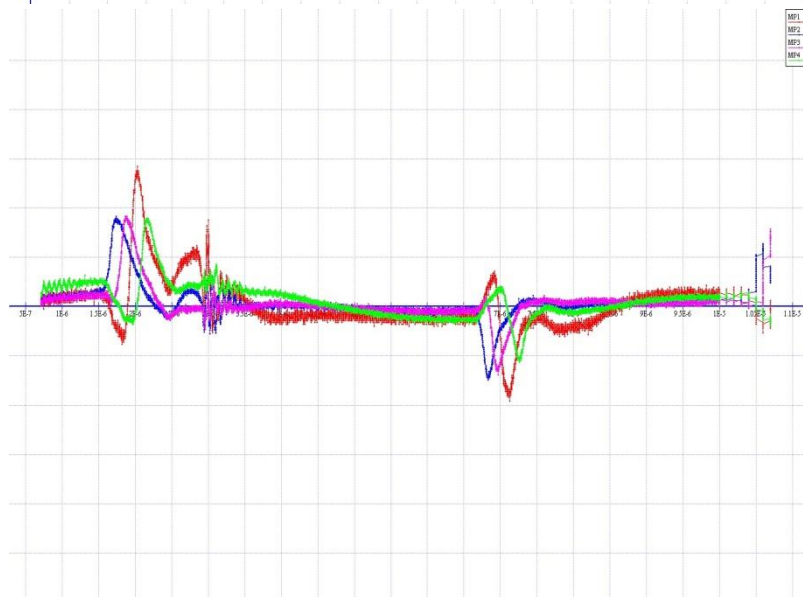
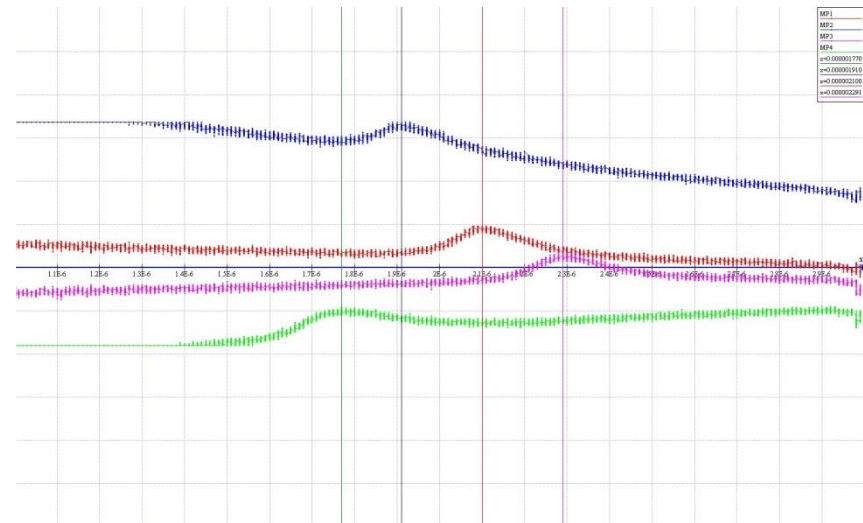
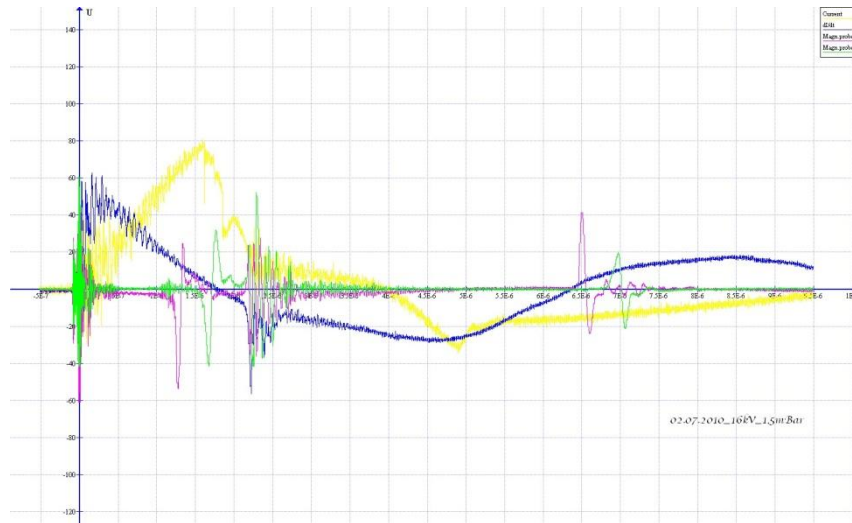
Inserting the array of magnetic probes in the electrode system



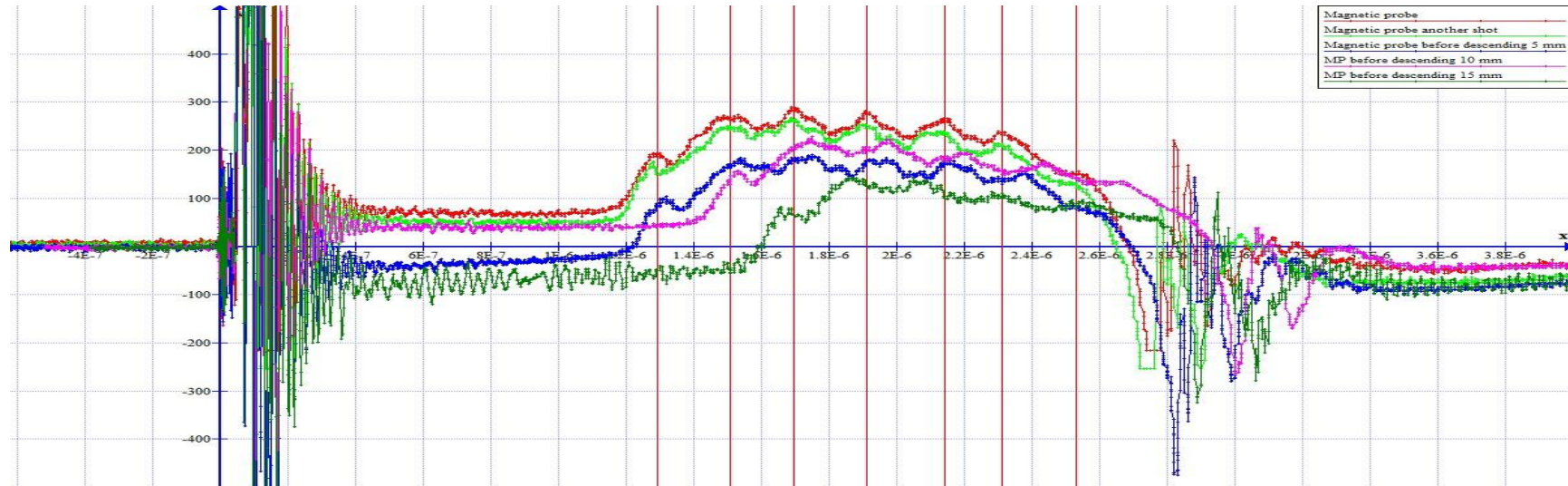
Real appearance of the magnetic probes



Oscilloscope graphs from different designs of and arrangements of the magnetic probes inside the electrode system of DPF

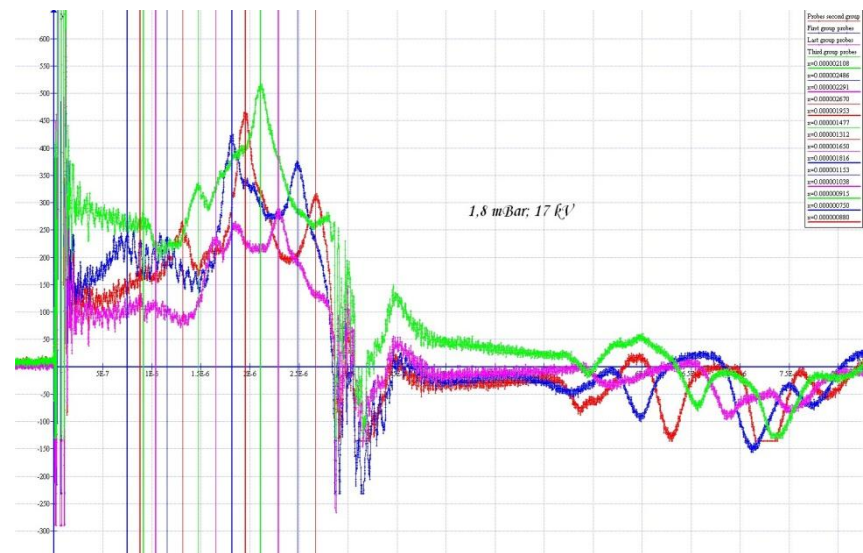
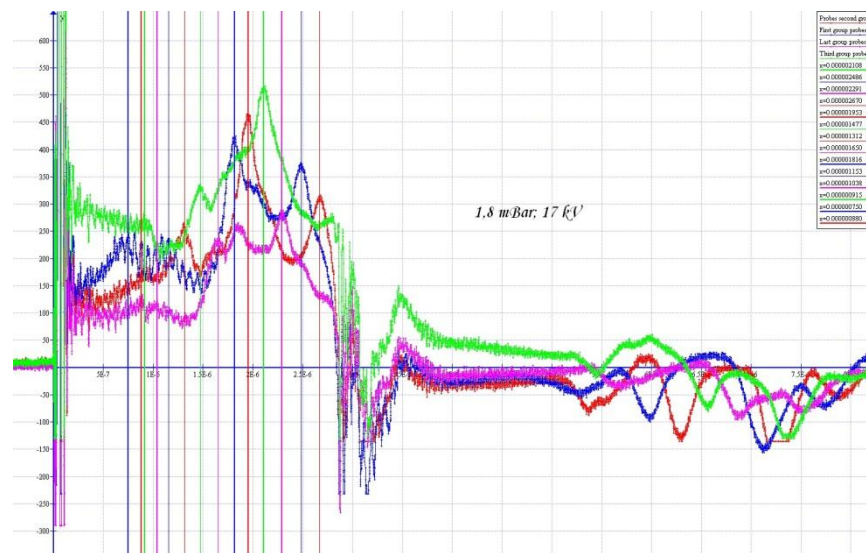
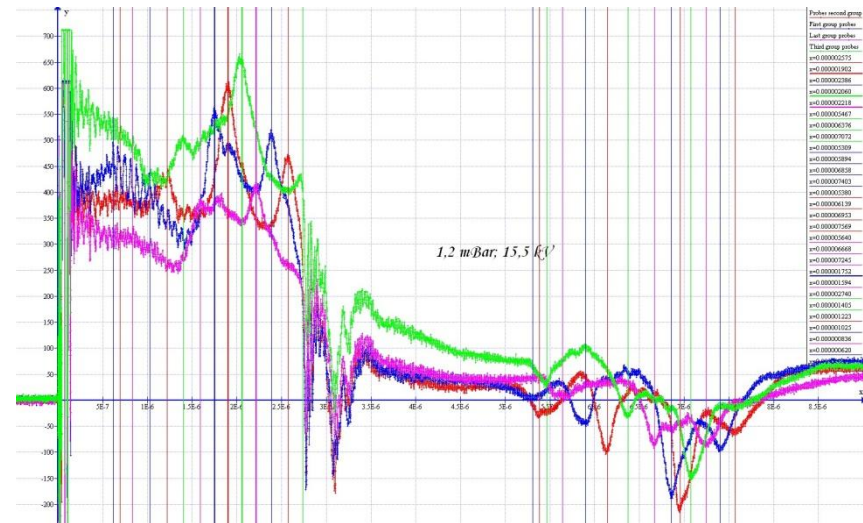
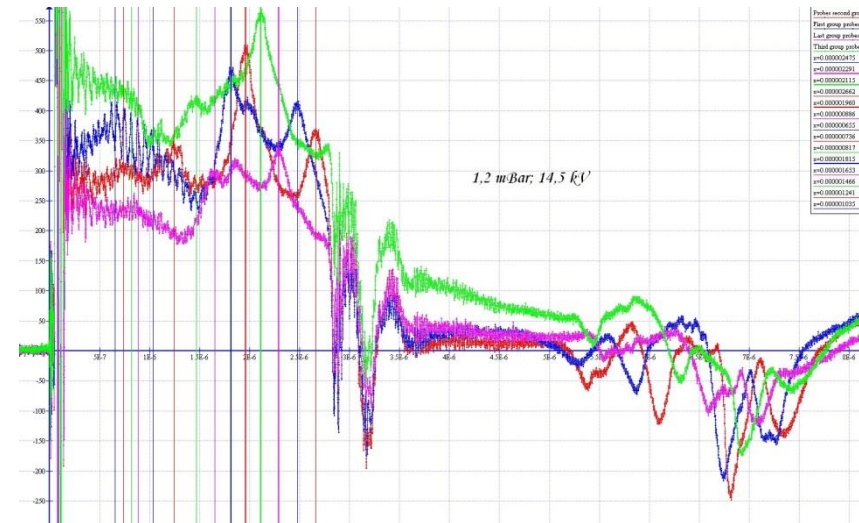


Signals from the 7 coil array, all connected in series to the scope's first channel



Here you can see a comparison of 5 oscilloscope graphs in the same time and voltage resolution and with all other work parameters being the same (including voltage, pressure, etc.). These pictures originate from the system of 7 magnetic coils, connected in series to the first channel of the scope. Each color represents different realization, corresponding to a different shot. Before each of the last three shots, the array of probes was shifted 0.5 cm towards the bottom of the electrode system.

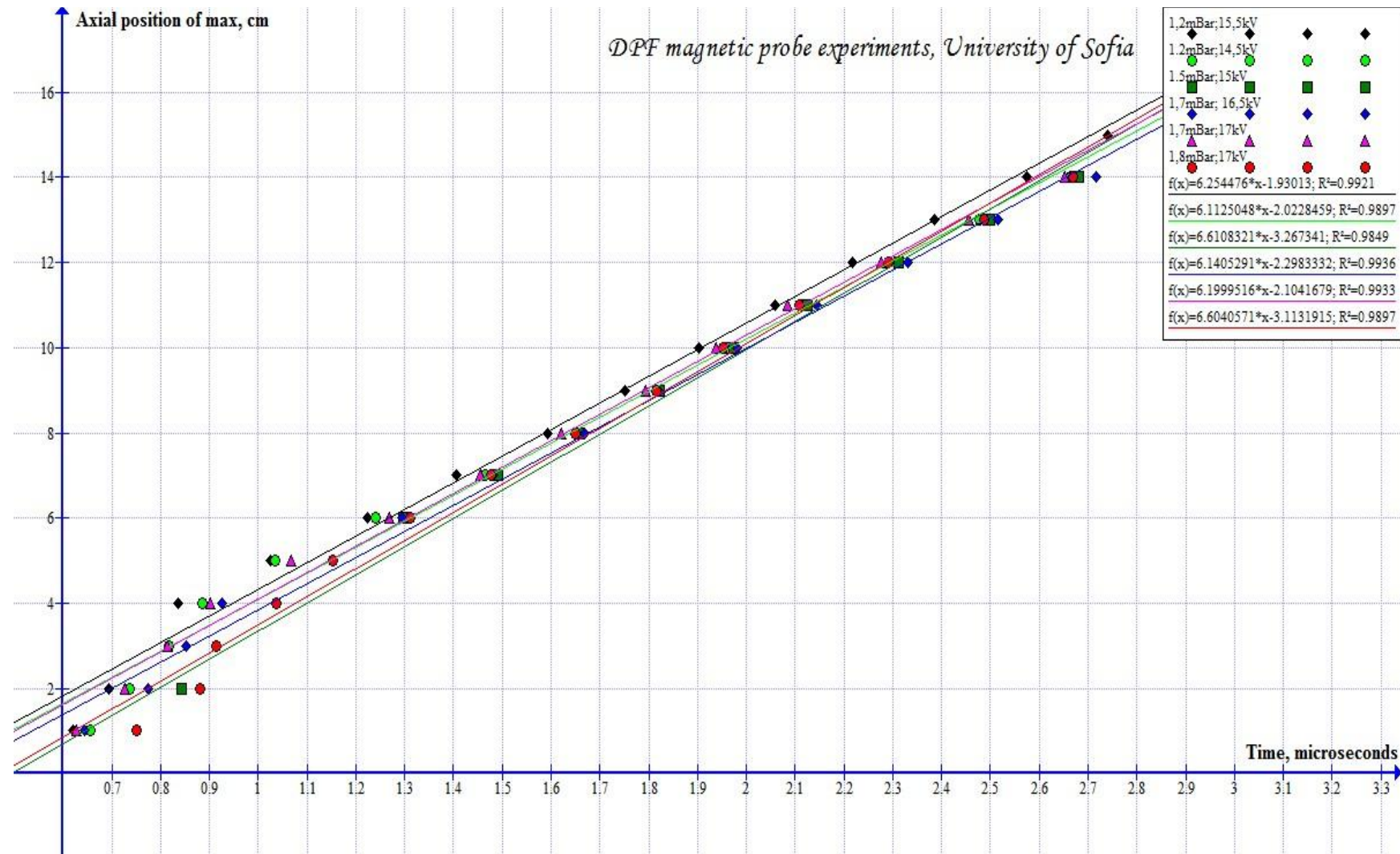
Typical oscilloscope graphs from the 20 coils magnetic probe array



How the system of 20 coils is used for determination of the motion of the current sheath ?



Determining the velocity of the current sheath using the system of 20 coils



Thank you for your attention !

What do the arrays of coils look like

