# Minutes midterm meeting PWIE SP X3 10-11-2021

Present: Vladimir Moiseenko (KIPT), Per Petersson (VR), Andrei Goriaev (LPP-ERM/KMS) (on behalf of Kristel Krombé and Sören Möller (FZJ)), Yurii Kovtun (KIPT) and David Douai

The plans which were presented cover a 2 years period 2021-2022: intermediate reports will be prepared at the end of 2021 or beginning 2022.

**Hennie**

Hennie summarized the goals of the SP X3 project, which are well known by the group

He will try to contact Paco

**Per (Pre- and post-characterization of samples and ECWC/ICWC/GDC plasma)**

* Marek is retired, but is still available
* Twofold task:   
  - pre-characterization of newly produced samples. The samples were exposed in TOMAS in the   
   period 9-20 May 2022. Effects of biasing studied (not yet analyzed)
* ECWC,ICWC, and GDC plasma characterization in TOMAS: new NPA results, more power means higher neutral particle flux. No Frank- Condon neutrals detected, will be possible with RFA
* Concerning B-removal results on old TEXTOR samples shown in 2021, the discrepancy could be due to the limited probing depth. New samples showed B-removal, thus all fine!
* The NPA will be equipped with a new turbo pumping scheme, minimizing losses at the first part of the NPA (effecting probably low energy neutral population)

**Andrei (Exploitation of TOMAS)**

* Technical upgrades:
* Fast camera has been purchases (beneficial for ICRH breakdown studies)
* NIR/VIS/UV spectrometer ordered
* New data-acquisition system ordered
* RFA ready for installation in TOMAS: enabling possibly detection of ionized Franc-Condon neutrals
* ICRH system has been automized and also GUI for controlling different diagnostics is being developed
* Single LP sent to factory for repair
* Safety issues
* Safety fence around TOMAS (design)
* Maintenance stage around TOMAS (design)
* Development of new triple probe manipulators
* Technical issues
* Malfunctioning IC amplifiers
* Broken hydrogen gas injector
* Studies
* B-erosion studies (GDC and ICWC exposure) for W7-X support (data analysis)
* ICRH plasma characterization by means of the triple probe
* ECRH plasma characterization with different MW polarization by means of the triple probe as an input for TOMATOR1D code development
* Improvement and implementation of the ICRH matching algorithm

Volodymyr suggested to use LID-QMS for study of impurities absorbed in the surface.

Andrei, equipment not available.

LIBS is maybe for later a good idea: giving depth resolved content till a depth of 20 um

**Volodymir (modelling)**

* Modelling (wall conditioning RF-based plasma).
* Balance equations of particles and energy were shown all put in a model
* How the modes influence performance not yet clear
* Plans
* Analysis of TOMAS RF discharge at frequencies higher than ion cyclotron.
* Examining of role of normal modes, collisional and collisionless dampings of the wave.
* Optimizations of neutral atom output.

**Yuri (diagnostics & plasma characterization)**

Yuri is currently in West Ukraine, but still trying to perform his work. A lot of data is still at KIPT Charkiw, maybe lost even…

To compensate for the loss of data his colleagues (in this meeting) will redo some measurements with the different probes. Yuri cannot travel abroad because of Ukraine restrictions, but he will guide his colleagues for use and control of the probes

**General remarks/conclusions**

Our heart is with Yuri and Ukraine colleagues: great respect for you all! Also on behalf of EUROfusion!