WP PWIE SPA3 (2023): KIPT
D004: Investigation of advanced materials under ELM-like/ disruption transient loading and subsequent analysis

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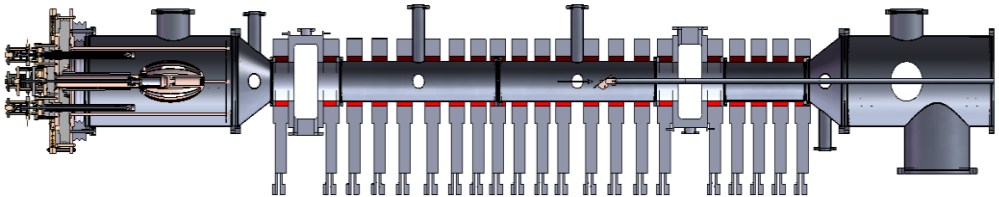
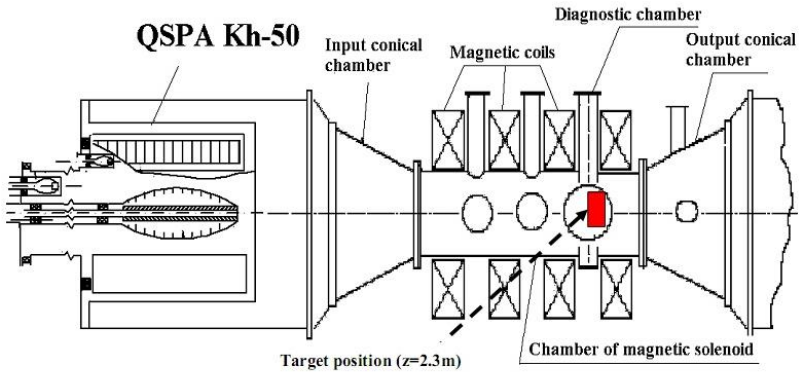
SPA3: Experimental facilities: QSPA Kh-50; QSPA-M

QSPA-M





Plasma energy density	0.1-1 MJ/m^2
Plasma load duration	0.1 ms
External magnetic field	0.8 T
Diameter of plasma stream	6 cm

I.E. Garkusha et al 2017 Nucl. Fusion 57, 116011;
I.E. Garkusha et al 2019 Nucl. Fusion 59, 086023

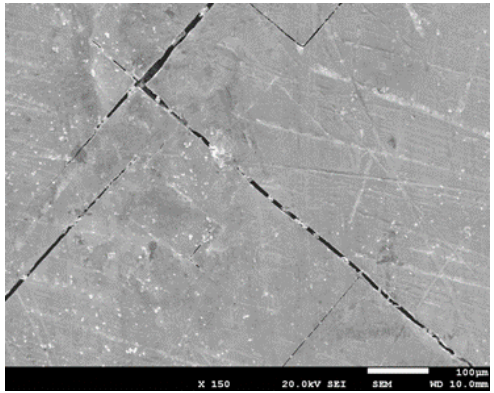
Plasma energy density	0.1–2.2 MJ/m^2
Plasma load duration	0.25 ms
Diameter of plasma stream	15 cm

V A Makhlai et al *2020 Phys. Scr. T171, 014047*
V.A. Makhlai et. al. 2021 Phys. Scr. 96, 124043

Experiments were stopped in the end of February 2022.

https://euro-fusion.org/eurofusion-news/eurofusion-stands-in-solidarity-with-research-in-ukraine/

Investigation of advanced materials under ELM-like/disruption



SEM of exposed W surface

- First results of the studies of parameters of plasma streams generated by the QSPA-M using mixed hydrogen (95 %) and helium (5 %) gases as a plasma-forming substance in the accelerating channel have been obtained.
- The influence of H&He plasma on tungsten is found to be similar to pure hydrogen exposures (at least for small fluences. (paper accepted for publication in journal Prob. Atomic Science and Technology)

- Comparison of H&He and pure H plasma impacts to W samples
- Analysis of damaging of the latticing AM W/WTa samples will be continued.
- Experiments will be started when the situation at KIPT became safe.
- Advanced Materials to be tested under different loadings (incl. different gases mixtures, pulses duration, number of pulses, etc.)

FAIRNESS

Transparency
Collaboration
Loyalty

OPENNESS

Open doors
Open hearts
Open minds
Open ears

COMMITMENT

Ownership
Critical thinking
Determination
Respect

DIVERSITY

Cooperation
Equal opportunities
Inclusion