DEVELOPMENT AND CREATION OF A COMPLEX OF DIAGNOSTIC EQUIPMENT FOR SPECTROSCOPIC DIAGNOSTICS ON FUSION FACILITY [[1]](#footnote-1)\*)

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Here we describe the development and creation of a diagnostic equipment complex for spectroscopic diagnostics on a fusion facility. The complex consists of the: high-etendue high-resolution spectrometer-polychromator (HES), developed for the Charge eXchange Recombination Spectroscopy (CXRS) diagnostics of plasma and providing simultaneous measurements in three spectral ranges 468 ± 5 nm, 529 ± 5 nm and 656 ± 6 nm [1]; high-etendue high-resolution scanning VIS-NIR spectrometer; high-precision remote positioning system for optical elements.

Originally, we have created this equipment complex for the CXRS diagnostics at ITER. Ion temperature profiles, poloidal and toroidal plasma rotation velocities and low-Z impurity densities are the key plasma characteristics measured with the CXRS technique. Excellent performance of the created diagnostic complex has been validated in the laboratory tests and during real-life experiments at T-10 tokamak.

We plan to exploit the created diagnostic equipment complex at both T15MD tokamak, soon coming into operation, and at TRT tokamak, being currently designed.

Here we present the laboratory characterization of the created diagnostic equipment complex, as well as the experimental results we achieved employing the developed complex for plasma physics research at T-10 tokamak [2,3].

The described diagnostic equipment complex, being primarily developed for the CXRS plasma diagnostics, can successfully be used for a wide range of applied spectroscopy problems, both for plasma physics research and various light emitting media property studies.

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1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/L/E/ru/JZ-Tugarinov.docx) [↑](#footnote-ref-1)