

PULSED UV SPECTRORADIOMETRY
WITH THE PRIMARY STANDARD
SYNCHROTRON RADIATION SOURCES
OF HIGH INTENSITY

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VNIIOFI has developed table-top electron accelerators – primary synchrotron radiation sources as national standards of spectral radiance and irradiance in the range of vacuum and air UV. The creation of pulsed synchrotron radiation sources with strong magnetic field for UV spectroradiometry is based on the use of available magnetic field with induction of 10-18 T and pulse duration 3-300 μs . The small duration of synchrotron radiation pulse permit to use the strong magnetic field and to operate with low vacuum level. The value of optimal radius is about few centimeters and particles energy is about 30-100 MeV for UV spectral region. The high level of UV spectral flux makes pulsed synchrotron radiation source quite useful for calibration of the secondary standard plasma sources as capillary discharge with evaporated walls and plasma focus. The synchrotron radiation source beam diagnostics includes the measurements of orbit radius, electrons energy, particles number and radial, axial, phase dimensions of electron bunch. VNIIOFI for many years attempted to create and improve special small-size standard synchrotron radiation sources available for metrological laboratory based on technique of strong magnetic field generation: uniron low-inductive magnet system. The further development of synchrotron radiation sources is connected with optimization accelerator parameters in order to rich spectral range of EUV about 13.5 nm in regime of 1 Hz frequency.