THE APPLICATIONS OF THE VACUUM ULTRAVIOLET STIMULATED AND SPONTANEOUSLY LIGHT SOURCES

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Vacuum ultraviolet (VUV) radiation generation in spontaneously and stimulated mode has been one of the major objectives in quantum electronics during last thirty years. The main reason is effective applications of VUV light sources. The physical reason of the VUV light efficiency is the high energy of VUV photons in reactions with matter which is higher the cohesion energy of difference solid states. This energy lies in the region ~ 3 – 6 eV. To this region corresponds the wavelength ~ 400 nm – 200 nm. It should be noted also that except of this argument the dissociation energy of difference gases lies in the energy region ~ 3 - 10 eV, which corresponds the 400 - 120 nm wavelength. This short remarks are demonstrating the high efficiency of reactions of VUV light with matter.

The applications of the vacuum ultraviolet light sources were presented in the articles and the reports of U.Kogelschatz [1-3]. Very interesting information about excimer lamps and their application can be found in new book by Boichenko, Lomaev, Panchenko, Sosnin, Tarasenko [4].

The most fruitful application of VUV light sources pointed in this report.

This application can be made with difference type VUV light sources: Pulsed excimer lamps, different discharge lamps, electron beam pumped excimer lamps, open discharge lamps. Current activity target in VUV light sources advanced processes like micro and nanostructuring of solid states surface, in photochemical and technological applications, in medicine, biology and in air and water purification.