

Abstract Submitted
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Loop-shaped UV lamp array with uniform irradiation distribution driven by a poly-phase ac discharge/plasma in a multi-pole magnetic field KAZUNORI MATSUMOTO, Toyama Prefectural University — An ultraviolet (UV) glow lamp in the shape of a loop had been devised by us to improve characteristics of spatial uniformity of irradiating distribution and emitting intensity of brightness. The lamps have been arrayed planarly into a light-emitting box, where spaces among lamps are wholly covered with aluminum thin-mirrors of high reflectivity for UV irradiation and surfaces of four walls surrounding the array are also covered with those. Experimental data measured by using a multi-channel spectroscopy showed that spatial irradiation distributions over the emitting box were highly uniform in both longitudinal and horizontal directions, and furthermore in height direction. The results indicate that we are able to perform photo-curing processes homogeneously even if a substrate has a curved surface or the substrate moves relatively, under very small amount of irradiation energy compared with conventional high intensity UV lamps. The presented lamp array is not limited to the photo-curing application and can be used widely in various fields of industry.

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