

## DEVELOPMENT, DIAGNOSTIC AND APPLICATIONS OF RADIO-FREQUENCY PLASMA REACTOR

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**Abstract.** In many areas of the industry, plasma processing of materials is a vital technology. Nonequilibrium plasmas proved to be able to produce chemically reactive species at a low gas temperature while maintaining highly uniform reaction rates over relatively large areas (Makabe and Petrović 2006). At the same time nonequilibrium plasmas provide means for good and precise control of the properties of active particles that determine the surface modification. Plasma needle is one of the atmospheric pressure sources that can be used for treatment of the living matter which is highly sensitive when it comes to low pressure or high temperatures (above 40 C). Dependent on plasma conditions, several refined cell responses are induced in mammalian cells (Sladek et al. 2005). It appears that plasma treatment may find many biomedical applications. However, there are few data in the literature about plasma effects on plant cells and tissues. So far, only the effect of low pressure plasmas on seeds was investigated. It was shown that short duration pretreatments by non equilibrium low temperature air plasma were stimulative in light induced germination of *Paulownia tomentosa* seeds (Puač et al. 2005). As membranes of plants have different properties to those of animals and as they show a wide range of properties we have tried to survey some of the effects of typical plasma which is envisaged to be used in biotechnological applications on plant cells. In this paper we will make a comparison between two configurations of plasma needle that we have used in treatment of biological samples (Puač et al. 2006). Difference between these two configurations is in the additional copper ring that we have placed around glass tube at the tip of the needle. We will show some of the electrical characteristics of the plasma needle (with and without additional copper ring) and, also, plasma emission intensity obtained by using fast ICCD camera.

### References

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