

Jae-Sung Kwon <sup>1</sup>

<sup>1</sup>Yonsei University College of Dentistry, Korea, Republic of

Application of plasma technology in the field of plasma medicine has been highlighted in recent few years, especially in the field of dentistry. Technology such as non-thermal atmospheric pressure plasma has been researched in many areas of dentistry, for both treatment and preventions of diseases, as it has many advantages over the existing technology such as being portable, non-thermal and relatively cheap for the operation, which makes them ideal for dental applications.

During past years, our laboratory and other dental laboratory have carried out extensive researches for the application of plasma bioscience in dentistry. Topics such as bioactive surface modification on biomaterial surface, antibacterial applications, tooth whitening, gingival tissue regeneration and oral cancer treatment have been considered with the use of non-thermal atmospheric pressure plasma. The research indicated the potential benefits of using the technology as well as possible role of radical and other active molecules in the related mechanisms.

The results from these researches were then led the development of possible application for non-thermal atmospheric pressure plasma such as tools for tooth whitening and gum treatment. Further development from the patents related to these technologies would provide promising future.

Finally, as part of the close work with both national and international dental/medical devices approval systems, we aim to aid the evaluation of the non-thermal atmospheric pressure plasma based dental and medical devices in terms of their safety and performances. Standardization of such pre-clinical evaluation would be necessary with the collaboration with international communities, which would allow another step forward for the plasma bioscience in dentistry, as a new technology based dental medical devices.

This research was supported by Leading Foreign Research Institute Recruitment Program through the National Research Foundation of Korea (NRF) funded by the Korea government (MSIT) (NRF-2016K1A4A3914113)