

Abstract Submitted
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Characterization of Atmospheric Pressure Plasma Jet (APPJ) and Its Effects on DNA¹ EK ADHIKARI, SYLWIA PTASINSKA, University of Notre Dame, Notre Dame, IN 46556 — Atmospheric Pressure Plasma Jets (APPJs) have been used to induce cell apoptosis in cancer treatment, tissue sterilization, and wound healing. There are several advantages of APPJs over other types of plasmas. Due to their non-thermal property, they interact with biological tissues (e.g., cells) without causing any thermal damage to them, thus contributing to *in-vivo* treatment method. In contrary to other plasma sources, the APPJ provides suitable conditions for treatment of biomolecules, which are fragile in vacuum, since it is launched into open atmosphere. Thus we can expand the range of plasma treatments including even living tissue. To explain the effects of APPJs, it is important to understand plasma interactions with fundamental biomolecules e.g., DNA. In this work, a helium APPJ source was constructed and then electrically and optically characterized for varied electrical parameters and feed gas compositions, e.g., admixtures of helium and water vapor or hydrogen peroxide. In addition, APPJ source was used to induce damage to aqueous DNA. The fraction of supercoiled, single-strand breaks and double-strand breaks in DNA were quantified by using agarose gel electrophoresis.

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