

# Atmospheric pressure plasma: application in polymeric surface modification and nanoparticles incorporation

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## Abstract

The treatment of polymers with atmospheric pressure plasmas (APP) has attracted a lot of attention due to the formation of functional groups on the polymer surface. Consequently, the surface properties of polymers, such as wettability, biocompatibility, and surface chemistry, are improved [1]. Furthermore, surface changes occur at shallow depths, so the bulk properties remain intact, which is crucial for various applications [2]. If nanoparticles are incorporated into the polymer surface, they can have applications as antimicrobial substrates, nanoplasmonic sensing devices, photovoltaic devices, polymeric nanocomposite membranes, etc. [3]

In this seminar, I will briefly explain plasma classification and generation. Also, different APP sources and plasma gas active species will be addressed. Then, I will describe modifications of APP treatment on polymer surfaces, such as surface contamination removal, etching, and functional groups substitution. Lastly, the example of nanoparticle incorporation into a polymer assisted by an atmospheric pressure plasma jet (APPJ) will be presented.

**Keywords:** atmospheric pressure plasmas (APP), polymers, polymeric surface modification, nanoparticles incorporation, atmospheric pressure plasma jet (APPJ)

## References:

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