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Decomposition of Chemical Chain Molecules with Atmospheric Pressure Plasma MURAT TANSILI, Anadolu University, EROL TASAL, Eskisehir Osmangazi University — Chemical chain molecules' decomposition is an interesting subject area for the atmospheric pressure plasma applications. The effects of the atmospheric pressure argon plasma on 4-((2-methoxyphenyl)Diazenyl)Benzene-1,3,-Diol molecule at room temperature are investigated. This molecule is one of the industrial dye molecules used widely. When considering the ecological life, this molecule will be very harmful and danger. We suggest a different, easy and useful decomposing method for such molecules. Atmospheric pressure plasma jet was principally treated for this decomposing of the molecule. Fourier transform infrared spectrometry (FT-IR) was used to characterization of the molecule after the plasma application to molecule in liquid phase with ethanol and methanol solvents. The atmospheric-pressure plasma jet of argon (Ar) as non-equilibrium has been formed by ac-power generator with frequency - 24 kHz and voltage - 12 kV. Characterizations for solutions prepared with ethanol and methanol solvents of molecule have been examined after applying (*duration*: 3 minutes) the atmospheric pressure plasma jet. The molecule was broken at 6C-7N=8N-9C stretching peak after the plasma treatment. The new plasma photo-products for ethanol and methanol solutions were produced as 6C-7N-8N=9C (strong, varying) and 12C=17O (strong, wide) stretching peaks.

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