

[VI-9] [초청]

## Electrical Breakdown in Flames

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Properties of electrical discharge in flames are investigated by making use of the ionization cross section of air. Flames have three distinctive features. They are hot, emit light and are weakly ionized. We investigate influence of these three characteristics of flames on the electrical breakdown. It is found that the breakdown electric field in flames is inversely proportional to the flame temperature, thereby easily generating plasmas in flames. A swarm of low-energy electrons in flames would allow a significant population of electronically excited states of flame molecules to

be formed. Therefore, the analysis shows that the electronic excitation of flame molecules may also considerably reduce the breakdown field. Plasma electrons generate atomic oxygens by the electron attachment of oxygen molecules in high-pressure flames. These oxygen atoms are the most reactive radicals in flames for material oxidation.

How are you and your family in this new year? Professor Choi! I plan to go back Korea on February 6. All my family members are fine and have good time because I am here. Once I am in Korea, I will call you. I am always grateful for your helpful hand. Thank you so much.