

Enhancement of plasma-assisted catalytic removal of ethylene through by-product utilization formed at ground electrode and identification of reaction pathways

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Ethylene is a plant hormone that promotes growth of fruits and vegetables (FVs). For prolongation of FVs postharvest life, surrounding ethylene must be removed. DBD plasma catalysis is one of the widely used technology for the removal of ethylene. One of the major disadvantages of this reactor is ozone and NO_x generation at the ground electrode, which is harmful to humans when exposed. Herein, the dependence of plasma discharge on Pd precursor and carrier gas along with dominant reaction pathway for ethylene removal were investigated. Finally, the DBD reactor was modified to prevent/utilize the by-product formed at the ground electrode.