

Abstract: Cellular polypropylene (PP) films were treated with sulfur hexafluoride (SF₆) gas in order to study the SF₆ penetration behaviour and optimize the electric charging conditions. There were differences in the penetration of SF₆ for different cellular PP materials, depending on the microscopic properties, which manifest themselves in the voided structure as well as in the mechanical stiffnesses of the cellular films. The penetration of SF₆ after long-term pressure treatment is confirmed in strongly inflated cellular PP films with a low mechanical stiffness of about 1 MPa. No SF₆ penetration occurs for slightly inflated cellular PP films with smaller void sizes and higher mechanical stiffnesses of around 5.8 MPa. The observed thickness variations, the higher charging fields during corona charging because of SF₆ penetration and the SF₆ environment, as well as the resulting electromechanical properties are discussed.