

The decomposition mechanisms of SF₆ and its candidate C₅F₁₀O

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The decomposition mechanisms of SF₆ with impurities (moisture and trace oxygen) and one of its candidates-C₅F₁₀O, were thoroughly studied in this paper. The quantum chemistry methods were adopted to investigate the decomposition processes of SF₆ and C₅F₁₀O. We also calculated the rate constants of the chemistry reactions included in above processes over a large temperature range from 300 K to 12,000 K. The dominant reactions and species in the decomposition were finally determined. The decomposition mechanisms of SF₆ are

hoping to lay a theoretical basis for service life condition online-monitoring of power equipment by analyzing SF₆ decomposition components. And the results of C₅F₁₀O play an important role in the feasibility study on alternative gas for SF₆ and can be used to further investigate the corresponding eco-friendly switchgear in the future.

Biography

Xiaohua Wang received his BSc degree from Chang'an University, Xi'an, China in 2000 and PhD degree from School of Electrical Engineering of Xi'an Jiaotong University, China, in 2006. His research interests are mainly in plasma chemistry, design and fault diagnosis technologies of electrical apparatus. He has published more than 100 peer-reviewed papers. He is an awardee of supporting program of new century excellent talents in University of the Ministry of Education.

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