

Design and Production Engineering

July 25-26, 2016 Berlin, Germany

Influence of TiB_2 and SnO_2 powders on arc erosion behaviors of Ag base contact materials

Xianhui Wang, Miao Zhang, Xiaohong Yang, Juntao Zou and Shuhua Liang
Xi'an University of Technology, China

To clarify the influence of the material characteristics of strengthening phase on the arc erosion behaviors of Ag base contact materials, Ag-8wt% TiB_2 and Ag-8wt% SnO_2 contact materials were fabricated by powder metallurgy. The microstructure was characterized, and the relative density, hardness and electrical conductivity were measured. The arc erosion of Ag-8wt% TiB_2 and Ag-8wt% SnO_2 contact materials was tested, the breakdown strength, arc duration and mass loss before and after arc erosion were determined, the surface morphologies and compositions after arc erosion were characterized, and the arc erosion mechanism of Ag base contact materials was discussed as well. The results show that TiB_2 powders have better strengthening effect than SnO_2 powders for Ag base contact materials. Compared with the Ag-8wt% SnO_2 contact material, Ag-8wt% TiB_2 contact material exhibits higher hardness, electrical conductivity and arc erosion resistance. After arc erosion 50 times, Ag-8wt% TiB_2 contact material presents higher breakdown strength, shorter average arc duration, less mass loss, larger erosion area and shallower pits, and more homogeneous surface composition.

Biography

Xianhui Wang is a Professor in the School of Materials Science and Engineering, Xi'an University of Technology. He is currently working in the Shaanxi Key Laboratory of Electrical Materials and Infiltration Technology in the Xi'an University of Technology, China.

xhwang683@xaut.edu.cn

Notes: