Influence of Surface Roughness and Temperature on the Adhesion of Wheel and Rail in Wet Conditions

Hiraku TANIMOTO Hua CHEN

The series of tests to measure the traction coefficient between wheel and rail with a twin disc rolling contact machine were carried out by varying surface roughness and temperature of wheel and rail rigs, as well as the temperatures of sprayed water, for the purpose of obtaining the fundamental knowledge how to prevent occurrence of wheel slip in driving and wheel slide in braking. The results show that the traction coefficient has the maximal value in the range of 1 to 3 μm of root mean square roughnesses under any temperature conditions, and its value increases up to 0.4 with the increasing temperature.