

**A Fundamental Study on Effect of Rust upon Adhesion Coefficient
between Wheel and Rail**

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This paper describes the effect of different kinds of rust, in which the constituent element is Ferric oxide, Iron oxide, Oxyhydroxide or Ferric chloride, on the traction coefficient between two discs of rolling-sliding frictional machinery. The disc surfaces were investigated by means of RAMAN spectroscopic analysis before and after the rolling experiments. The results indicated that γ -FeOOH had an effect on increasing the adhesion, however, Cl⁻ decreased the adhesion compared with the surface condition without rust. Moreover, the adhesion obtained in the case of α -Fe₂O₃ has been identified to be greater than that of Fe₃O₄.