Identification of Iron Rusts on Rail by X-Ray Diffract	
Journal	Advanced Materials Research (Volume 409)
Volume	THERMEC 2011 Supplement
Edited by	T. Chandra, M. Ionescu and D. Mantovani
Pages	581-585
DOI	10.4028/www.scientific.net/AMR.409.581
Citation	Yasutomo Sone et al., 2011, Advanced Materi
Online since	November, 2011
Authors	Yasutomo Sone, Junichi Suzumura, Naoya Ka
Keywords	Corrugation, Rail, Railway, Raman Scattering, (XRD)
Abstract	A periodical unevenness of the running surface tunnel. One of the causes has been concluded induced by some kinds of iron oxides and oxyh has not been made clear yet. In this study, X-r attempted to identify iron rusts on the rail as a many railway companies.
Full Paper	Get the full paper by clicking here

First page example

Advanced Materials Research Vol. 409 (2012) pp 581-585
Online available since 2011/Nov/29 at www.scientific.net

doi:10.4028/www.scientific.net/AMR.409.581

Identification of Iron Rusts on Rail
Ana

Yasutomo Sone[1, a], Junichi S
and Toshih

[1]Railway Technical Research Institute, 2-8-38

[2]Department of Materials Science and Engin
Kanazawa, Ishikav

[a]ysone@rtri.or.jp, [b]suzumura@rt
[d]sasakit@kenroku

Keywords: Railway, Submarine tunnel, Rail, (
Vibrational spectroscopy

Abstract. A periodical unevenness of the runnin
submarine railway tunnel. One of the causes has
friction and wheel load variation induced by so
various coefficients of friction on the rail, though
diffraction and Raman scattering spectroscopic a
rail as a process to solve the periodic unevenness

Introduction

On ascending slope of submarine railway tunn
rails is occasionally formed. They are often calle
large but slight longitudinal roll-slip phenomenon
load variation excited by trains passing on rail w
friction between a wheel and a rail is regarded
oxyhydroxides with various coefficients of frictio
the corrugated rail before lifetime of rail itself. O
ascending slope of mountain tunnel. The auth
between the submarine tunnel and the mountain t

In this study, the kinds of iron oxides and oxy
rail in both the submarine tunnel and mountai
facilitated analytical methods to identify the kinds
have been attempted. Especially, Raman scatter
applying the vibrational energy between atoms o
has been focused on. These days, Raman spectro
expected to be the on-site analyzing method.

After the identification of the rusts artificial
diffraction (XRD) and Raman scattering spectro
been compared. In this paper, the authors report t

Experiments

Sample Preparation Process. At first, iron
specimens in the environment like submarine tun
wet conditions, dry conditions and 1% sodium ch
for steel plate specimens' preparation were decid
they are shown in Fig. 1. We carried out XRD on
materials, and then carried out Raman analysis an