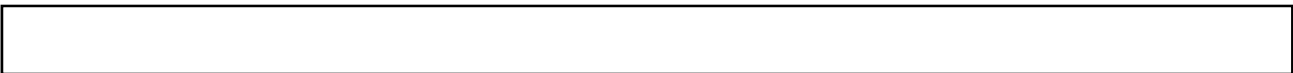




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μ



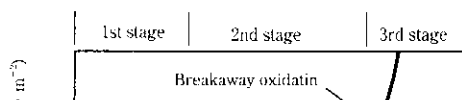
# Effect of La and Zr Addition on High-Temperature Oxidation Resistance

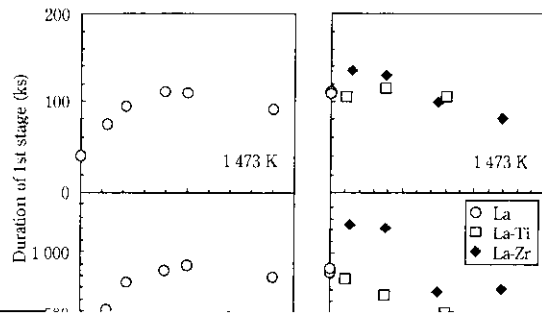
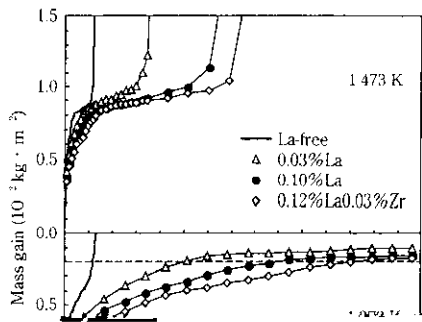
YOSHIO KAWASAKI, TOSIYUKI KAWASAKI, TOSIYUKI KAWASAKI, TOSIYUKI KAWASAKI\*

Table 1 Chemical compositions of experimental heats

(mass%)

layers using a transmission electron microscope were conducted for 20%Cr-5%Al steel foil which contains La, La and Ti, or La and Zr, and the mechanism of





0 500 1000 1500  
Oxidation time (ks)

Fig. 2 Oxidation behavior of 50  $\mu\text{m}$  thick foil samples without addition of La and with addition

0 0.1 0.2 0 0.1 0.2 0.3  
La content (%) Ti or Zr content (%)

Fig. 4 Effect of La, Ti or Zr content on duration of 1st stage of oxidation of 50  $\mu\text{m}$  thick 200

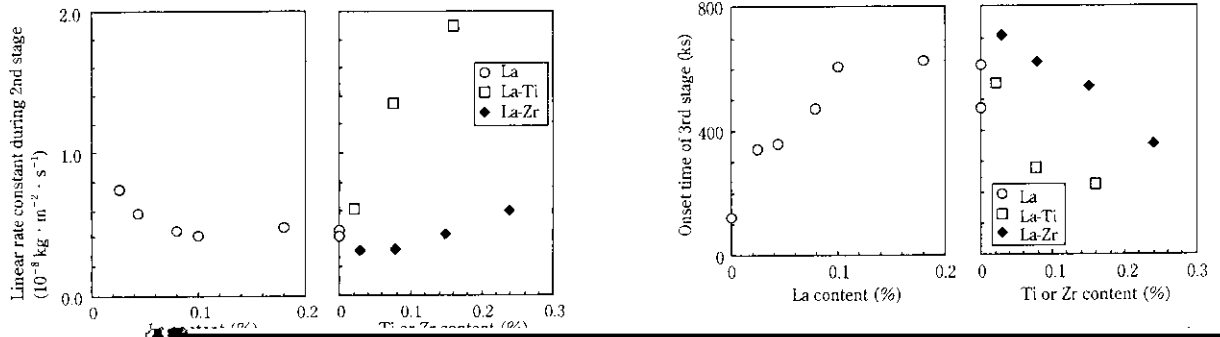


Fig. 6 Effect of La, Ti or Zr content on linear rate constant during second stage of oxidation of

of third stage in oxidation of 50  $\mu\text{m}$  thick 20Cr-5Al steel foil samples at 1473 K in air

Table 2 Results of X-ray diffraction analysis for foils oxidized at 1473 K

Alloy	Oxidation time (ks)	Mass gain ( $\times 10^{-2} \text{kg} \cdot \text{m}^{-2}$ )	Strong peak	Weak peak
0.09%Al-0.16%Ti	72	0.63	$\alpha\text{-Al}_2\text{O}_3$	

TiO<sub>2</sub> in the second stage, when the Al in foil was

however, the segregation of only La at the grain