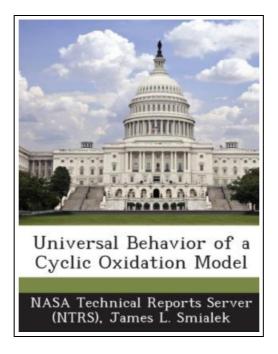
# Universal Behavior of a Cyclic Oxidation Model



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# Reviews

This book is really gripping and fascinating. Of course, it is actually play, nonetheless an interesting and amazing literature. You will not feel monotony at anytime of the time (that's what catalogs are for about if you request me).

(Delbert Gleason)

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BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 26 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.A mathematical model has been generated to represent the iterative, discrete growth and spallation processes associated with cyclic oxidation. Parabolic growth kinetics (k(sub p)) over and a constant spall area (F(sub A)) were assumed, with spalling occurring interfacially at the thickest regions of the scale. Although most models require numerical techniques, the regularity and simplicity of this progression permitted an approximation by algebraic expressions. Normalization could now be performed to reflect all parametric effects, and a universal cyclic oxidation response was generated: W(sub u) 12 3J(sub u)(sup 12) J(sub u)(sup 32) where W, is weight change normalized by the maximum and J(sub u) is the cycle number normalized by the number to reach maximum. Similarly, the total amount of metal consumed was represented by a single normalized curve. The factor (S(sub c)-l)(raised dot)sqrt(F(sub A)k(sub p)DELTAt) was identified as a general figure of merit, where S(sub c) is the mass ratio of oxide to oxygen and DELTAt is the cycle duration. A cyclic oxidation failure map was constructed, in normalized k(sub p)-F(sub A) space, as defined by the locus of points corresponding to a critical amount of metal consumption in a given time. All three constructions describe behavior for every value of growth rate, spall fraction, and cycle duration by means of single curves, but with two branches corresponding to the times before and after steady state is achieved. This item ships from La Vergne, TN. Paperback.



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