## **Accepted Manuscript**

Elasto-plastic phase field modelling of oxidation of zirconium alloys

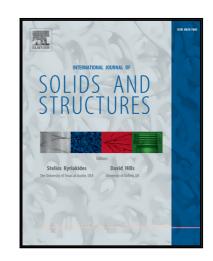
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PII: S0020-7683(17)30492-4 DOI: 10.1016/j.ijsolstr.2017.10.033

Reference: SAS 9785

To appear in: International Journal of Solids and Structures

Received date: 12 August 2017 Revised date: 17 October 2017 Accepted date: 27 October 2017



Please cite this article as: Yunong Zhao, Shigang Ai, Daining Fang, Elasto-plastic phase field modelling of oxidation of zirconium alloys, *International Journal of Solids and Structures* (2017), doi: 10.1016/j.ijsolstr.2017.10.033

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#### ACCEPTED MANUSCRIPT

### **Highlights:**

- A phase field model coupled with elasto-plastic and creep constitutive model is proposed to study the oxidation behaviour of zirconium alloys.
- The corresponding finite element formulations are derived.
- Some novel mechanical failure mechanisms of the protective oxide layer are revealed.



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