

## Accepted Manuscript

Modeling of the effect of the void shape on effective ultimate tensile strength of porous materials: numerical homogenization versus experimental results

M. Masmoudi , W. Kaddouri , T. Kanit , S. Madani , S. Ramtani , A. Imad

PII: S0020-7403(16)30710-X  
DOI: [10.1016/j.ijmecsci.2017.06.011](https://doi.org/10.1016/j.ijmecsci.2017.06.011)  
Reference: MS 3739



To appear in: *International Journal of Mechanical Sciences*

Received date: 6 November 2016  
Revised date: 22 May 2017  
Accepted date: 10 June 2017

Please cite this article as: M. Masmoudi , W. Kaddouri , T. Kanit , S. Madani , S. Ramtani , A. Imad , Modeling of the effect of the void shape on effective ultimate tensile strength of porous materials: numerical homogenization versus experimental results, *International Journal of Mechanical Sciences* (2017), doi: [10.1016/j.ijmecsci.2017.06.011](https://doi.org/10.1016/j.ijmecsci.2017.06.011)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

**Highlights**

- Numerical homogenization technique and morphological analysis based on the finite element method used to compute mechanical properties of porous materials
- Considering 2D porous matrix containing random distribution of identical nonoverlapping circular or elliptical voids
- Several microstructure configurations obtained by varying the voids morphology and the porosity of the matrix
- The representative volume element is used in order to estimate the morphology effect of the voids on the effective ultimate tensile strength of the called lotus-type porous metals
- Confrontation of the obtained numerical results to an analytical model and experimental data is performed.
- A formula improving the Boccaccini model is proposed to estimate effective tensile strength of porous metals taking into account the voids morphology

ACCEPTED MANUSCRIPT

Download English Version:

<https://daneshyari.com/en/article/5015976>

Download Persian Version:

<https://daneshyari.com/article/5015976>

[Daneshyari.com](https://daneshyari.com)