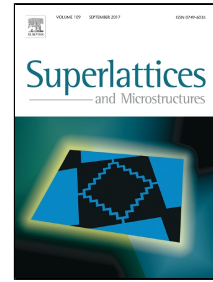


Accepted Manuscript

A general higher-order nonlocal couple stress based beam model for vibration analysis of porous nanocrystalline nanobeams

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PII: S0749-6036(17)31375-7

DOI: 10.1016/j.spmi.2017.09.010

Reference: YSPMI 5242

To appear in: *Superlattices and Microstructures*

Received Date: 04 June 2017

Revised Date: 05 September 2017

Accepted Date: 06 September 2017

Please cite this article as: Farzad Ebrahimi, Mohammad Reza Barati, A general higher-order nonlocal couple stress based beam model for vibration analysis of porous nanocrystalline nanobeams, *Superlattices and Microstructures* (2017), doi: 10.1016/j.spmi.2017.09.010

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Highlights

- **It is the first time to study the vibration analysis of porous nanocrystalline nanobeams based on nonlocal couple stress theory**
- **The essential measures to describe the real material structure of nanocrystalline nanobeams and the size effects were incorporated.**
- **This non-classical nanobeam model contains couple stress effect to capture grains micro-rotations.**
- **Nanocrystalline nanobeam is composed from three phases which are nano-grains, nano-voids and interface.**
- **Nonlocal elasticity theory of Eringen is applied in analysis of nanocrystalline nanobeams for the first time.**

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