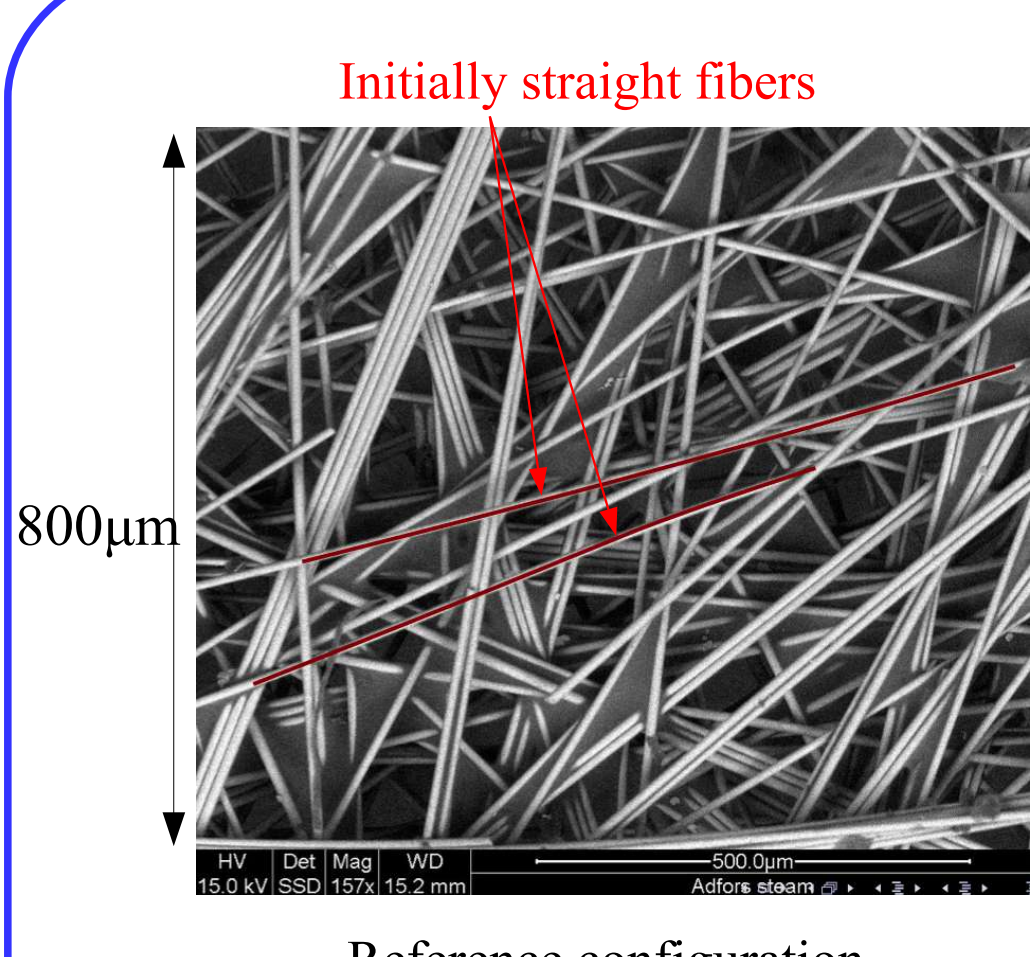
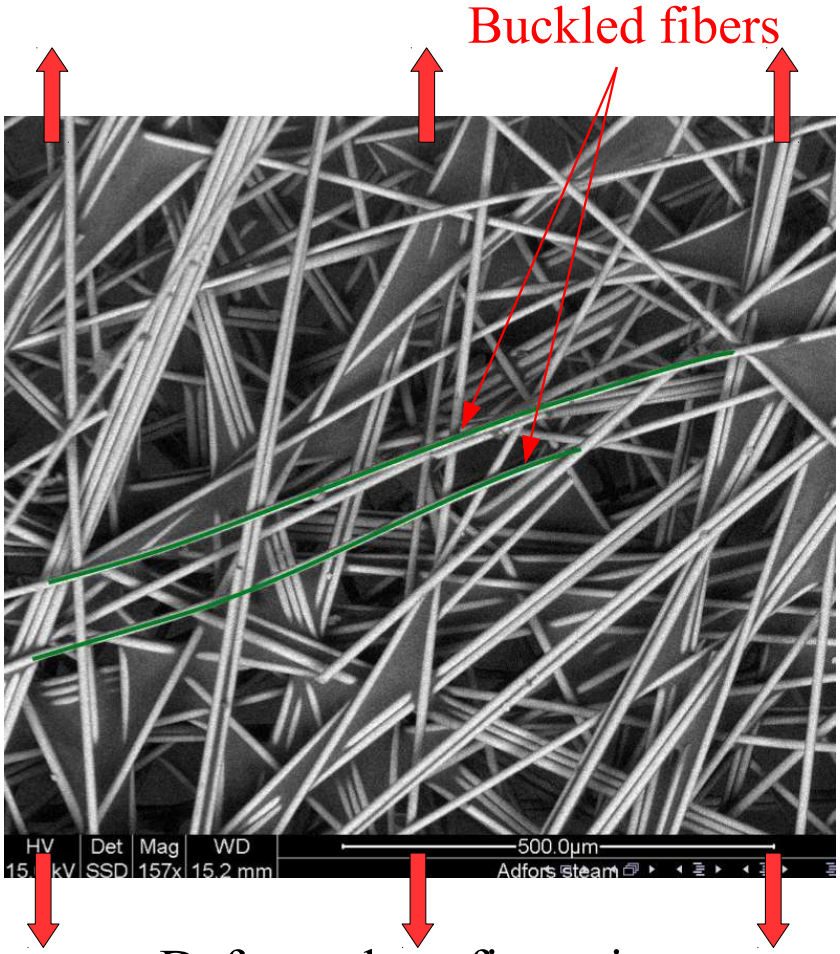
Compression-loose fibre media: continuum constitutive law and single crack case-study

Omar Mahmood[1,2], Basile Audoly[1], Stephane Roux[3], David Rodney[4]

Introduction



Reference configuration



Deformed configuration

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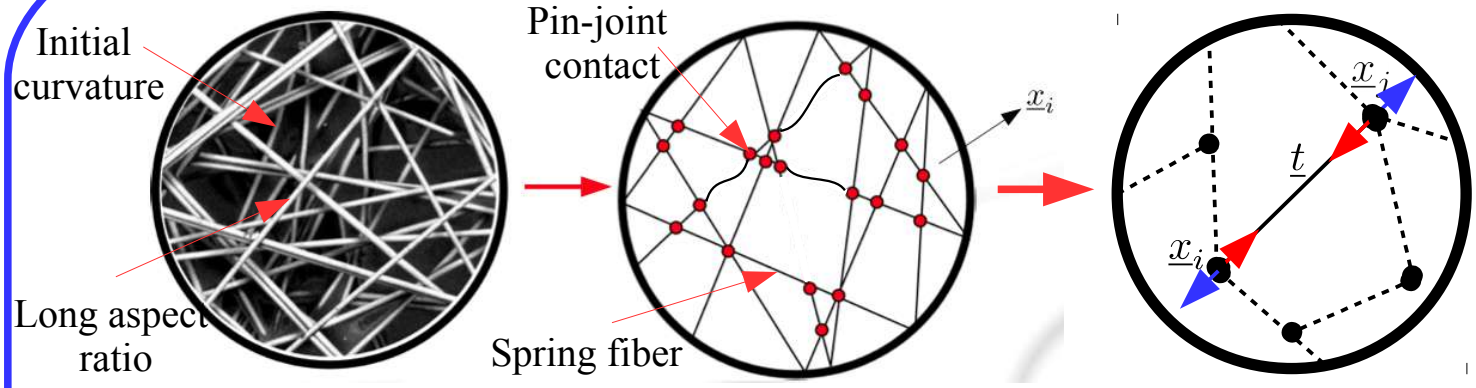
Model and results



Stretching :

$$n(\underline{t}) = k\, \underline{t} \cdot \underline{\underline{\varepsilon}} \cdot \underline{t}$$

Compression :

$$n(\underline{t}) = \eta k\, \underline{t} \cdot \underline{\underline{\varepsilon}} \cdot \underline{t}$$

Non linearity parameter :

$$\eta \in [0, 1]$$

$$w(\underline{\underline{\varepsilon}}) = \frac{1}{2} k \int_{\omega_t(\phi)} e(\chi)^2 \, d\chi + \frac{1}{2} \eta k \int_{\omega_c(\phi)} e(\chi)^2 \, d\chi$$