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Fabrication, characterisation and modelling of uniform and gradient auxetic foam sheets

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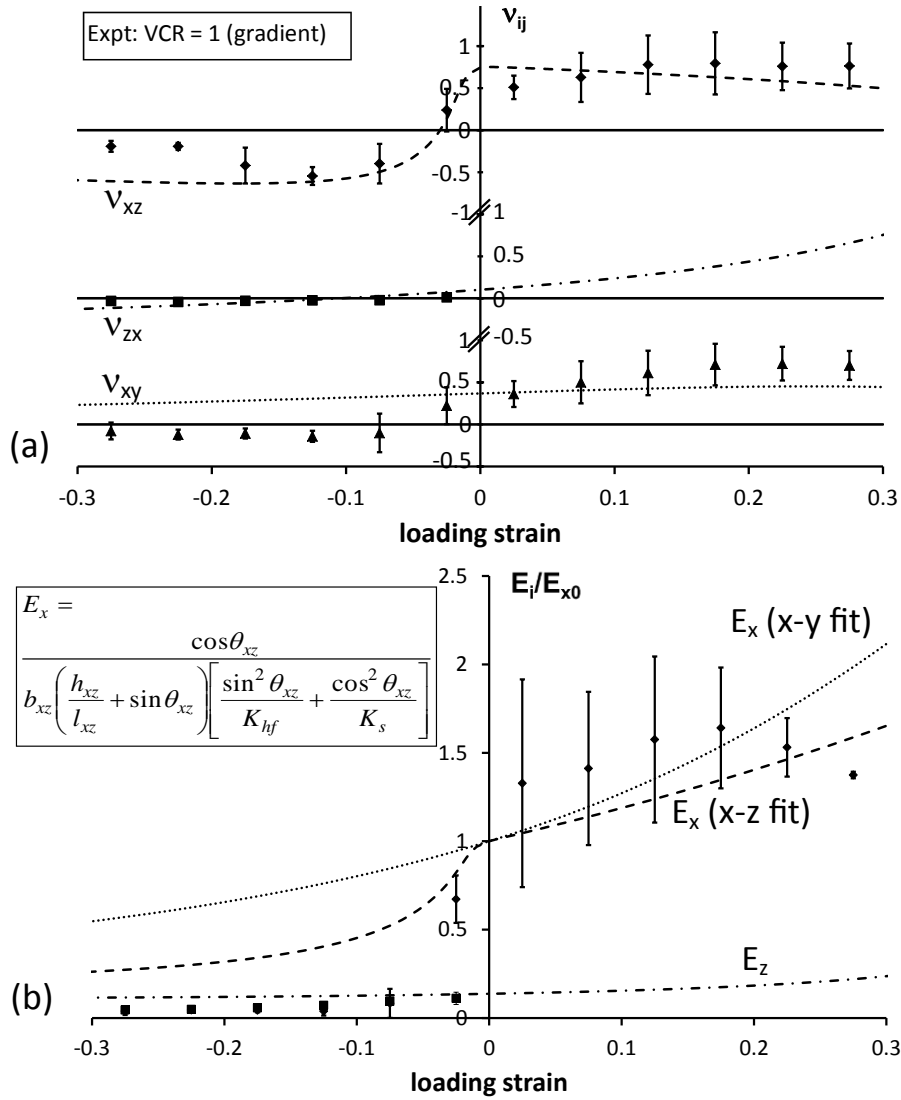
Figure 8: Mechanical properties vs strain predictions. (a) Directional PR predictions (curves) and experimental VCR=1 (gradient foam) data (symbols) vs loading strain: ν_{xz} and ν_{zx} predictions for $h_{xz} = 1.2$, $l_{xz} = 1$, $b_{xz} = 0.2$, $\theta_{xz} = -0.1°$, $\varphi = 10°$ and $K_{hf}/K_s = 0.004$ ($K_f/K_h = 9$, $K_s/K_h = 225$); ν_{xy} predictions for $h_{xy} = l_{xy} = 1$, $b_{xy} = 0.2$, $\theta_{xy} = 30°$, $\varphi = 0°$ and $K_{hf}/K_s = 0.3$ ($K_f/K_h = 9$, $K_s/K_h = 3$); (b) Directional Young's moduli (normalised to undeformed E_x) predictions (curves) and experimental data (symbols) vs loading strain: model parameters as for (a). The E_x (x-z fit) model expression is shown as an exemplar.