**Supplementary material:**

TABLE SI. Design parameters

|  |  |
| --- | --- |
| Parameter | Value (mm) |
| Unit cell size | 1.20 |
| Strut thickness | 0.20 |
| Pore size | 0.65 |
| Height | 18.10 |
| Width  | 12.10 |
| Depth  | 12.10 |

TABLE SII. Material property defect characterization

|  |  |  |
| --- | --- | --- |
| Localization | Elastic modulus (GPa) | Indentation points |
| Node | 124.57 ± 3.87 | 239914 |
| Horizontal strut | 110.74 ± 3.32 | 155138 |
| Diagonal strut | 117.72 ± 1.89 | 198216 |

TABLE SIII. Morphological defect characterization

|  |  |
| --- | --- |
| Parameter | Value (mm) |
| Horizontal strut thickness  | 0.20±0.029 |
| Diagonal strut thickness  | 0.15±0.019 |
| Horizontal strut waviness  | 0.018±0.01 |
| Diagonal strut waviness  | 0.01±0.007 |
| Node radius  | 0.30±0.01 |