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Figure 1 Particle size distribution of the sand used in this study

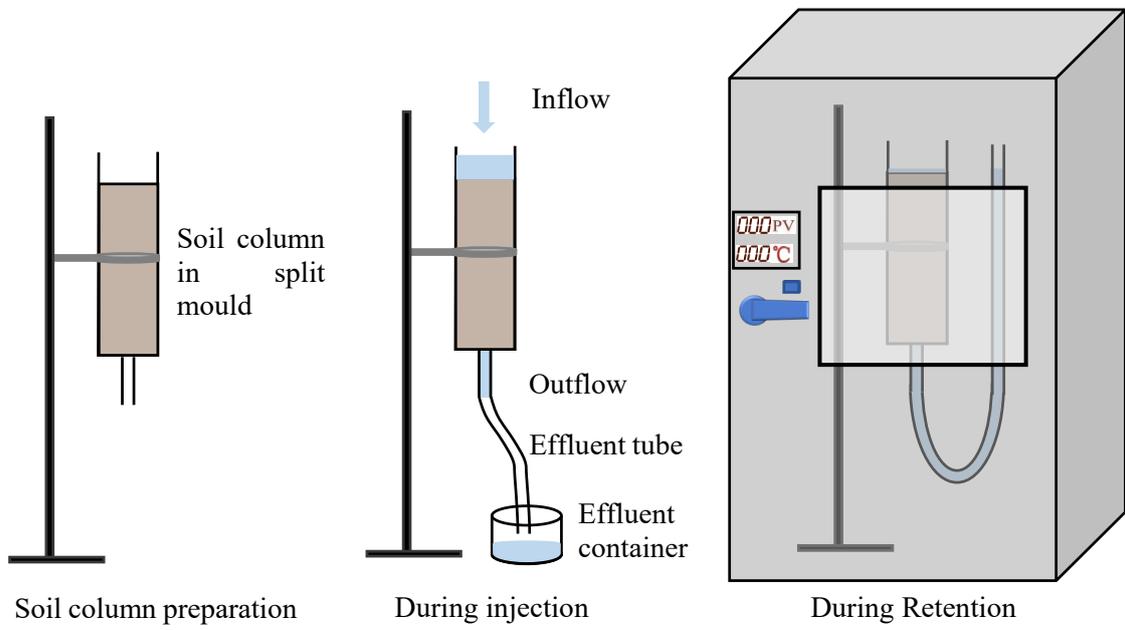


Figure 2 Schematic of the soil column experiments

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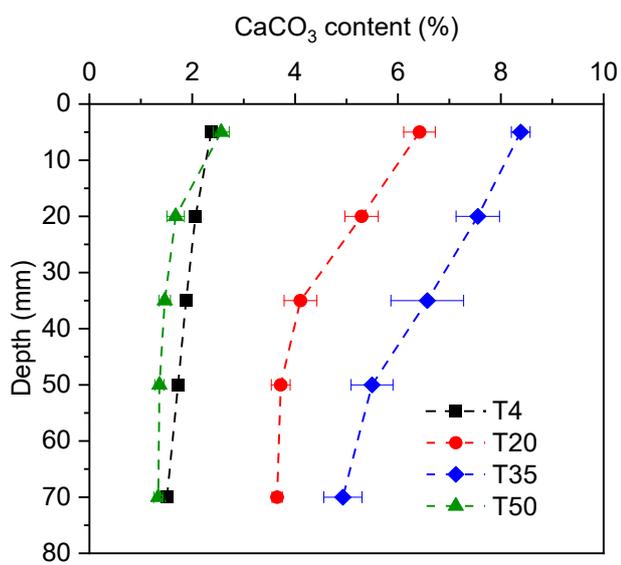
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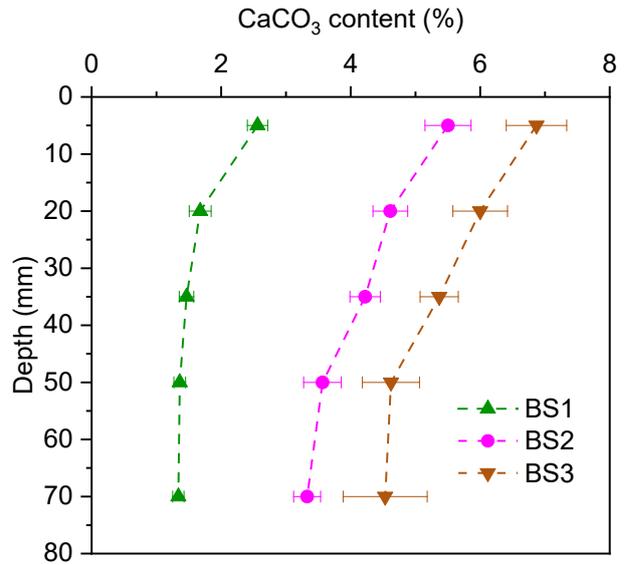
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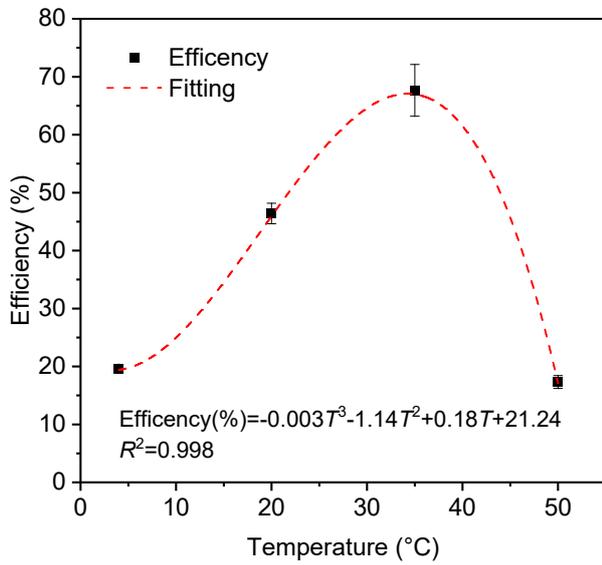
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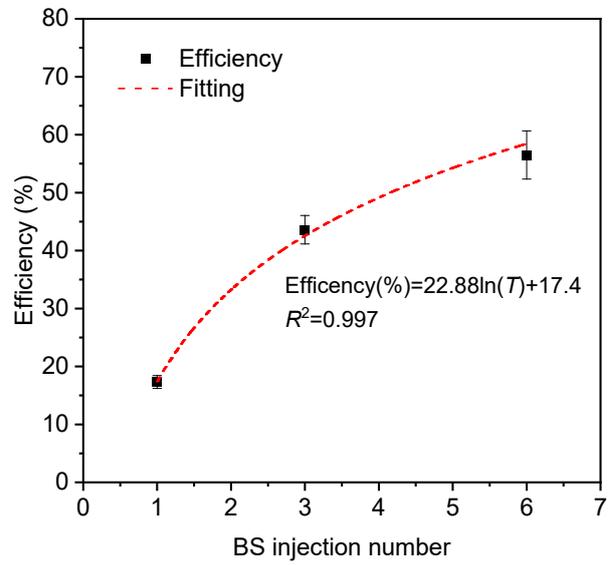
(a)



(b)



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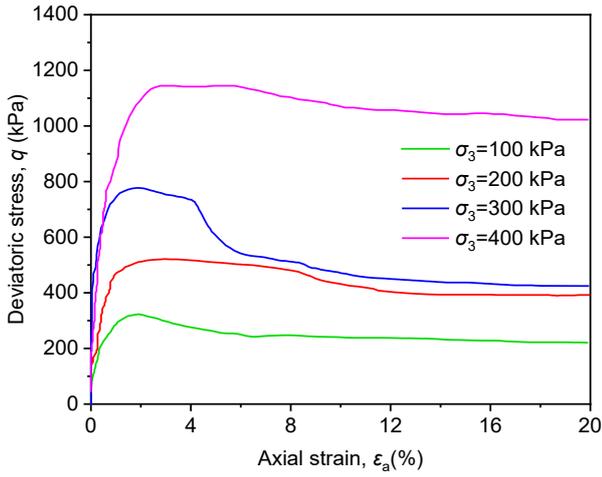
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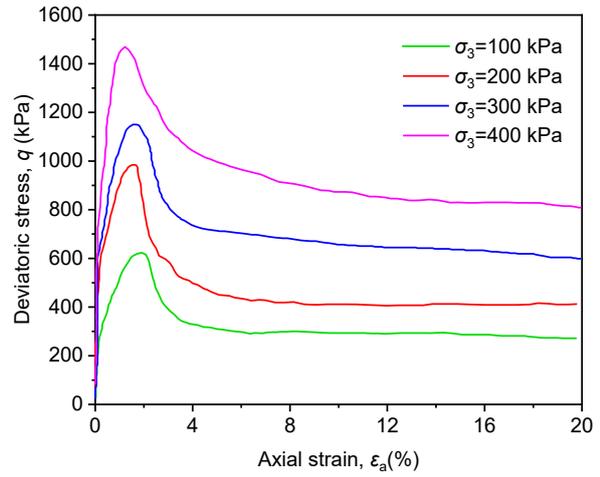
42 **Figure 3** CaCO₃ distribution along sand columns and chemical transform efficiency of MICP: (a, c) specimens treated at
43 different temperatures with bacteria introduced only once; (b, d) specimens treated at 50°C with bacteria introduced once,
44 twice, and three times, respectively

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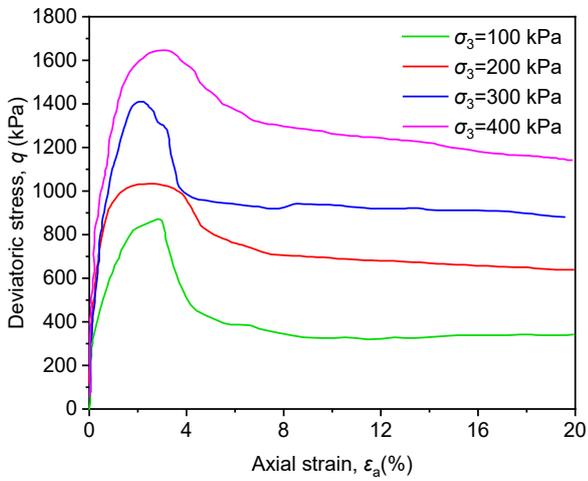


(a)

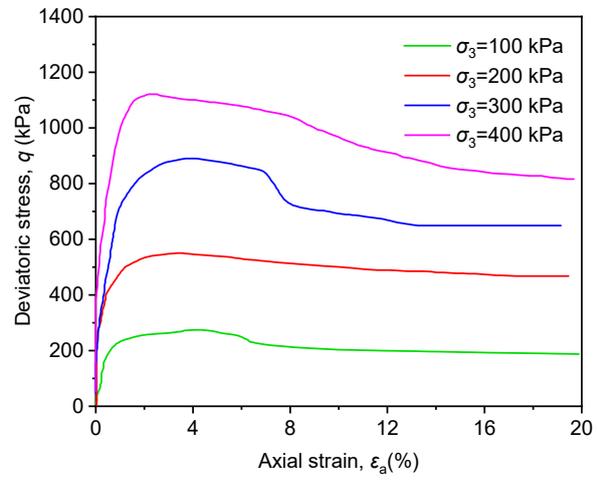


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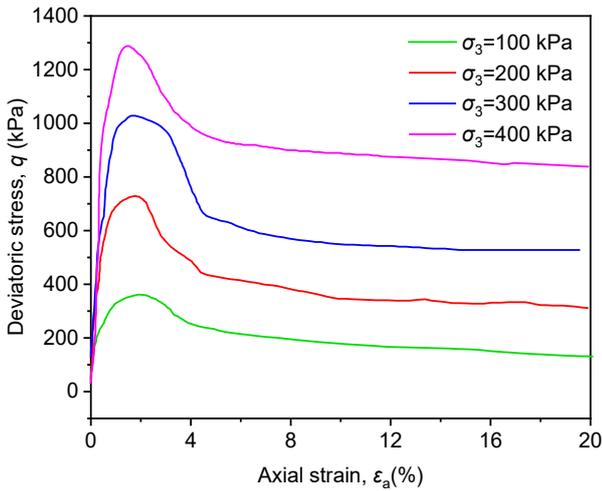


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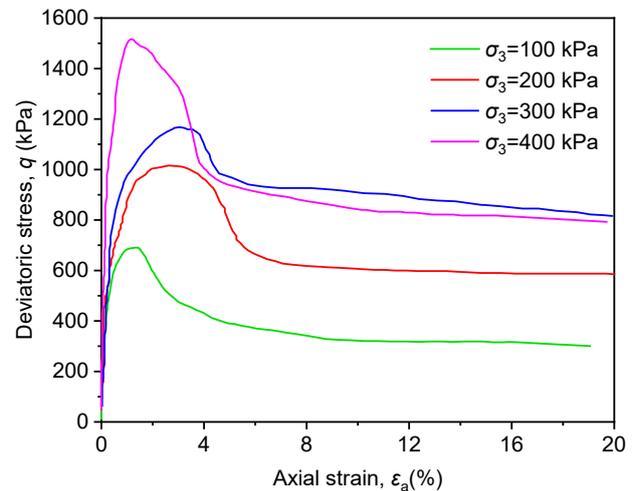


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(e)

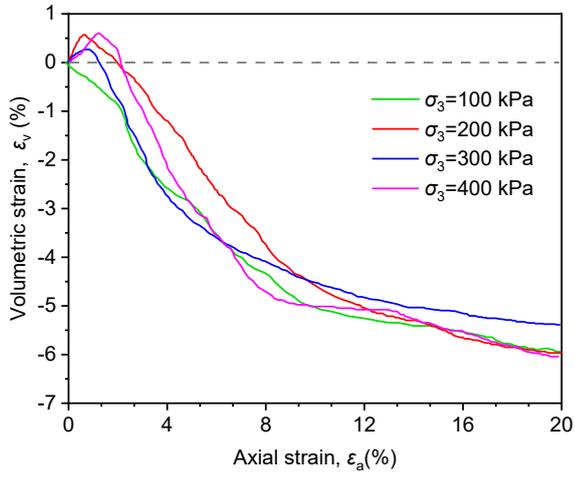


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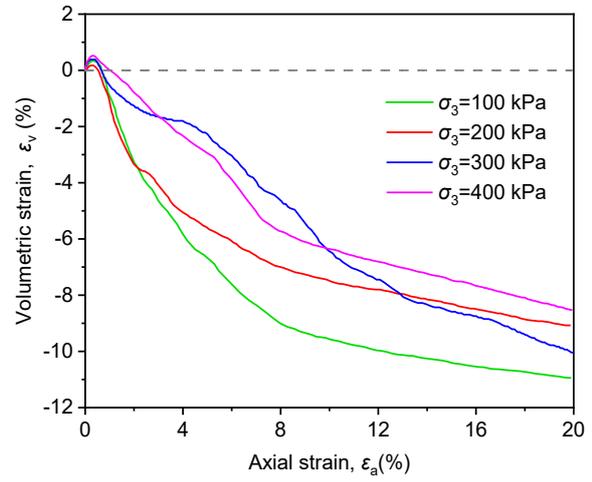
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59 **Figure 4** Stress-strain behaviour for the specimen treated at: (a) T=4°C; (b) T=20°C; (c) T=35°C; (d) T=50°C (BS1); (e)
60 T=50°C (BS3); (f) T=50°C (BS6)

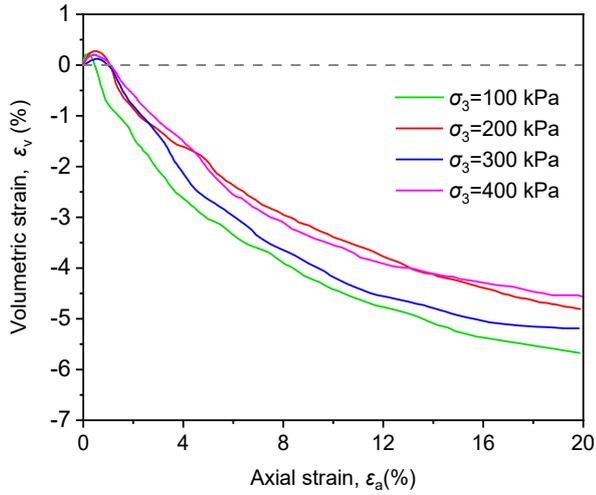
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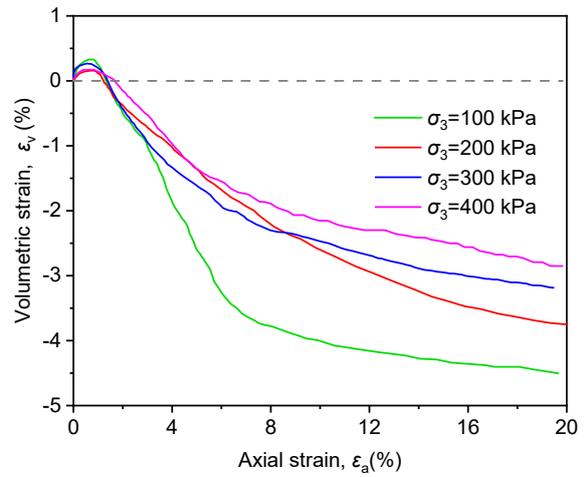
(a)



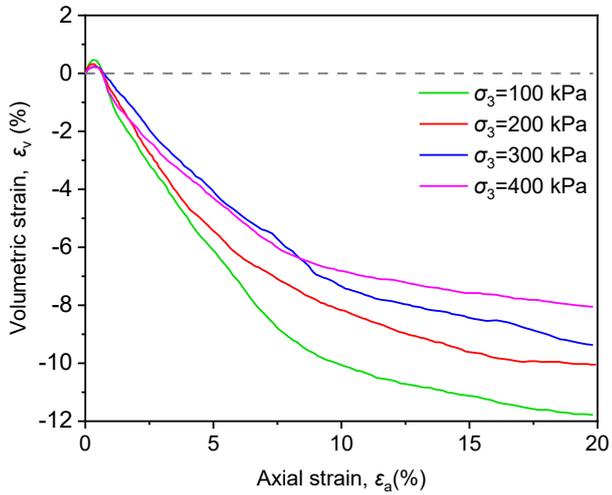
(b)



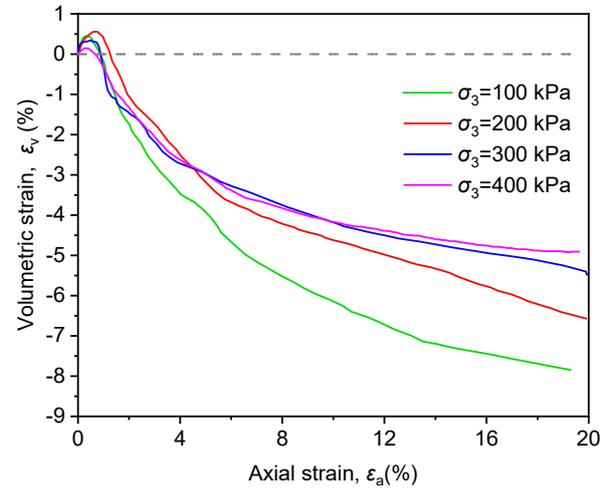
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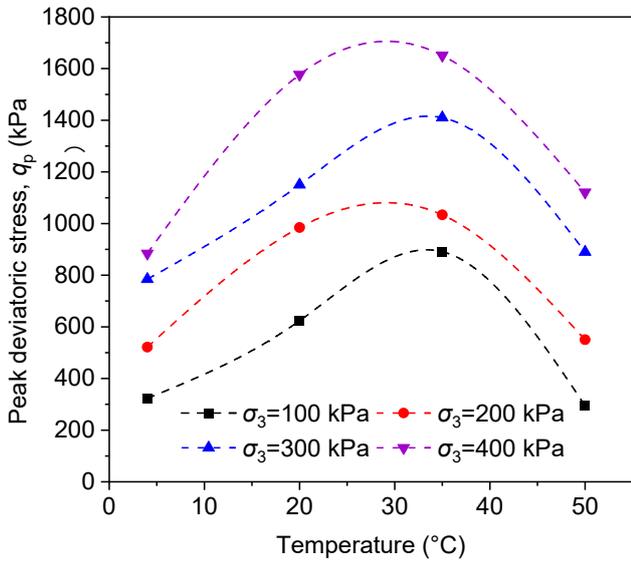


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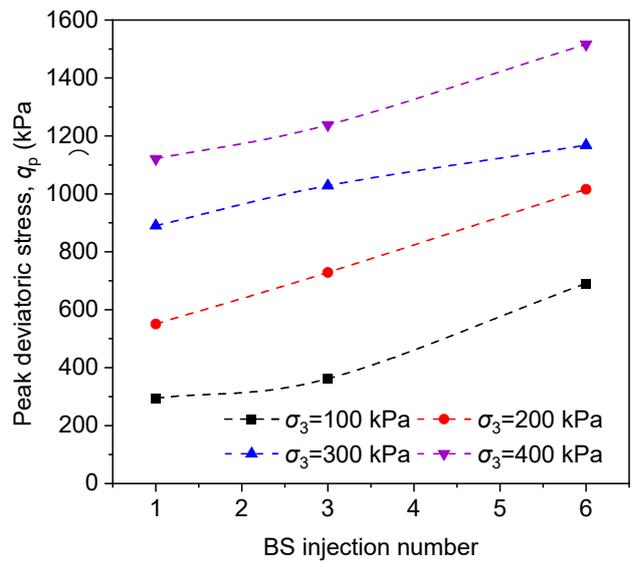


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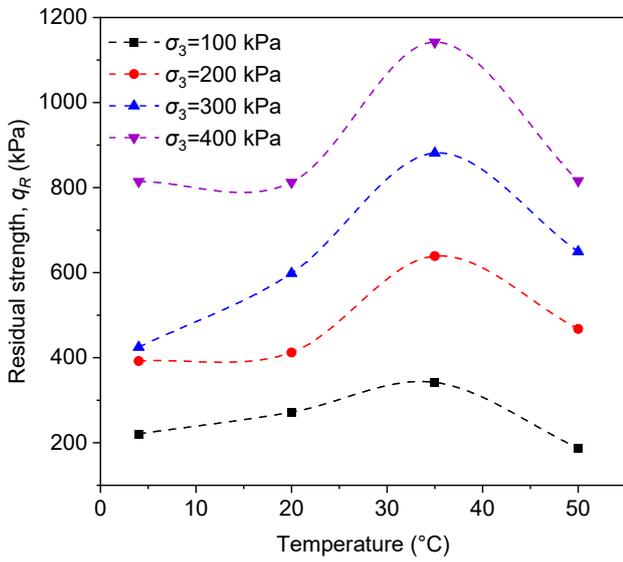
Figure 5 Relationship between axial strain and volumetric strain: (a) $T=4^{\circ}\text{C}$; (b) $T=20^{\circ}\text{C}$; (c) $T=35^{\circ}\text{C}$; (d) $T=50^{\circ}\text{C}$ (BS1);
(e) $T=50^{\circ}\text{C}$ (BS3); (f) $T=50^{\circ}\text{C}$ (BS6)



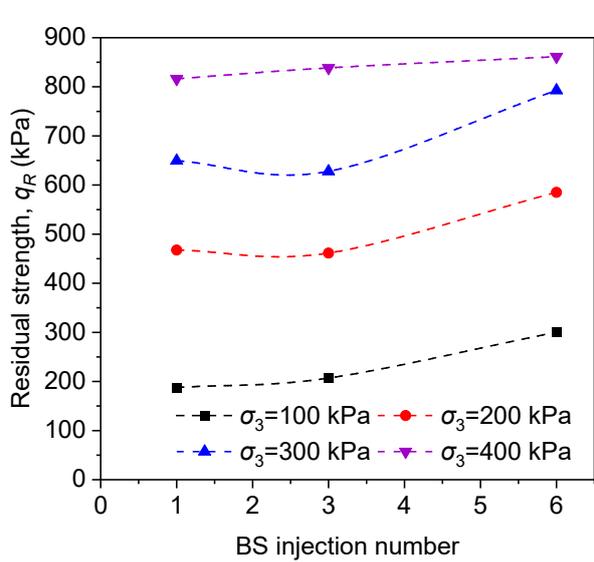
(a)



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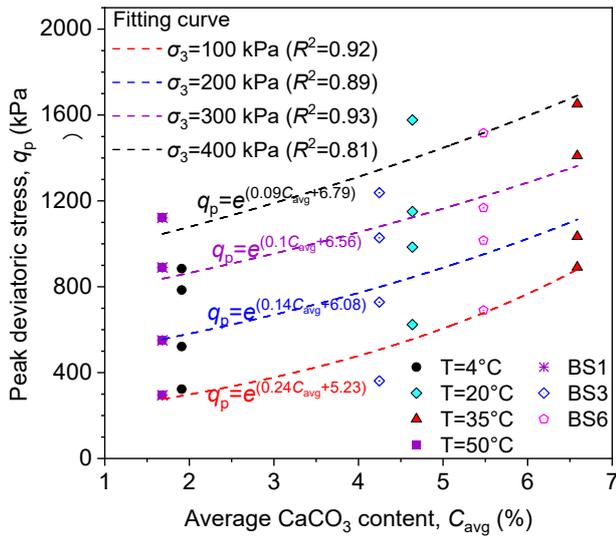
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77 **Figure 6** Measured and fitted relationship of $q_p-T-\sigma_3$ and $q_R-T-\sigma_3$: (a, c) specimens treated at different temperatures with
 78 bacteria introduced only once; (b, d) specimens treated at 50°C with bacteria introduced once, twice, and three times,
 79 respectively

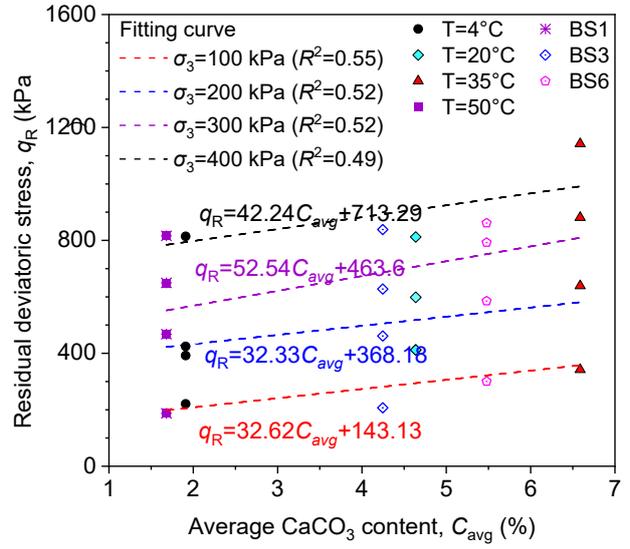
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Figure 7 Relationships between peak (a) and residual deviatoric stress (b) with average CaCO₃ content

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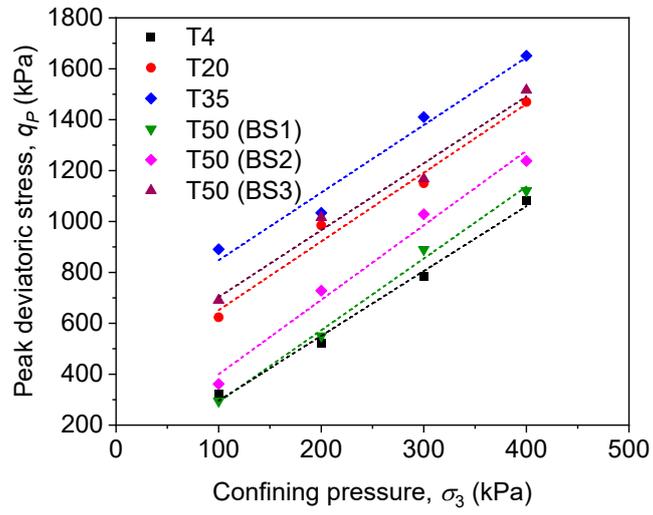


Figure 8 Relationship between peak deviatoric stress and confining pressure

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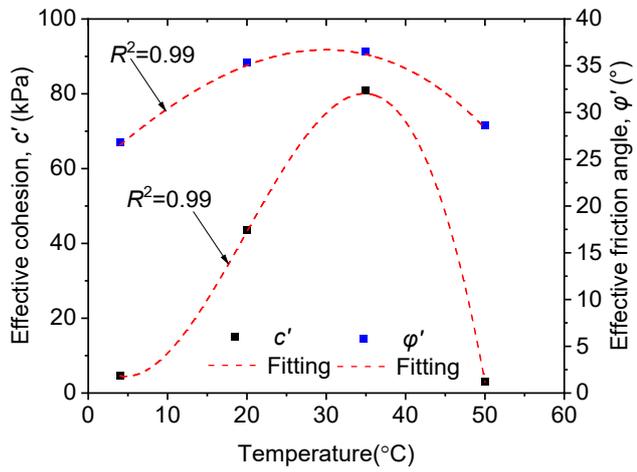
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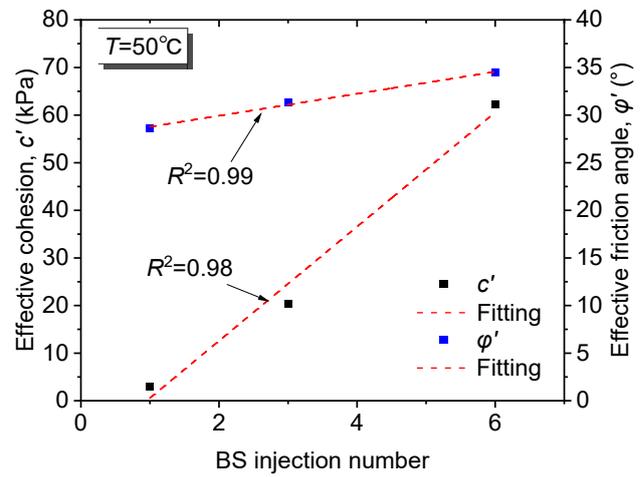
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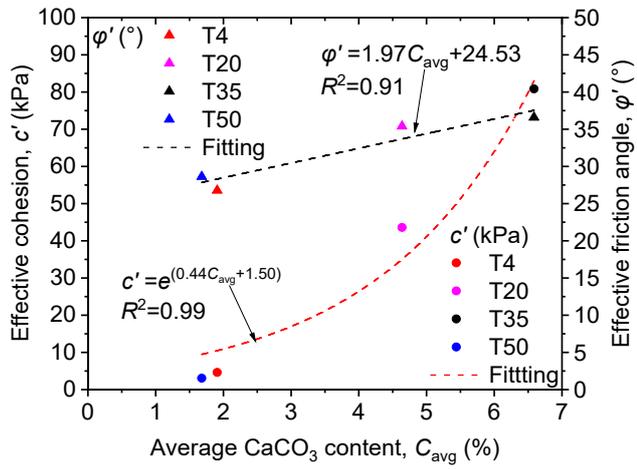
(a)



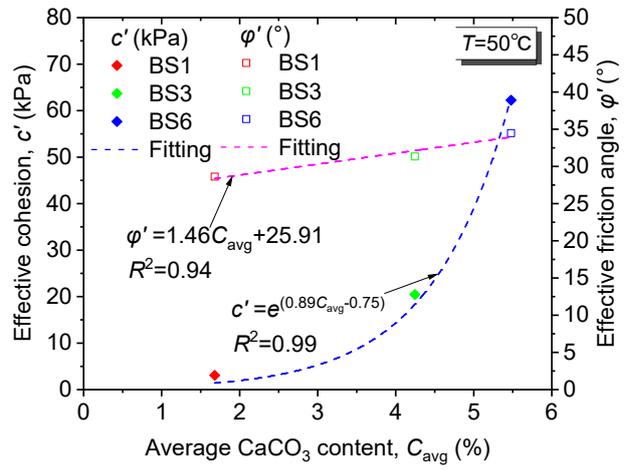
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Figure 9 Relationship between strength parameters and average CaCO_3 content at: (a) different temperature; (b) different BS injection number at 50°C

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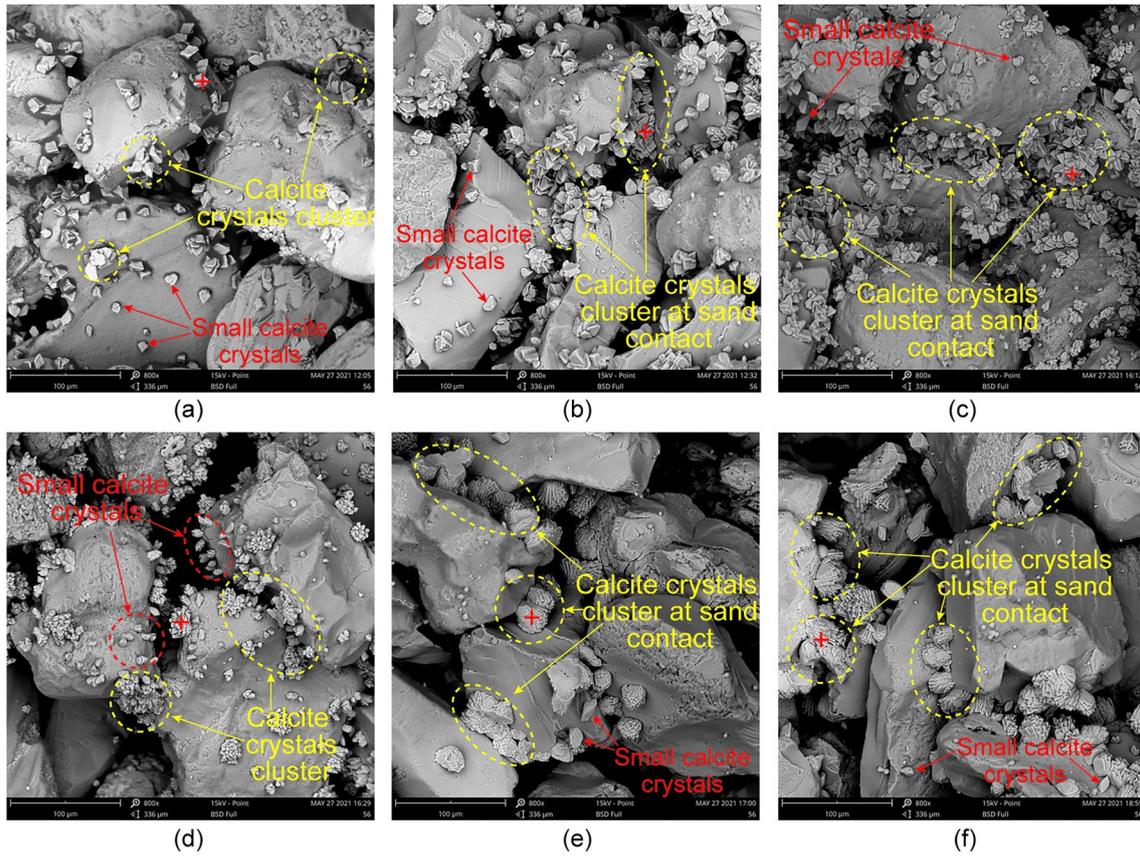
(a)



(b)

Figure 10 Effects of average CaCO₃ content on effective cohesion and friction angle

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160 **Figure 11** SEM images of specimens treated at different temperature and conditions: (a) T=4°C (BS1); (b) T=20°C (BS1);

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(c) T=35°C (BS1); (d) T=50°C (BS1); (e) T=50°C (BS3); (f) T=50°C (BS6)

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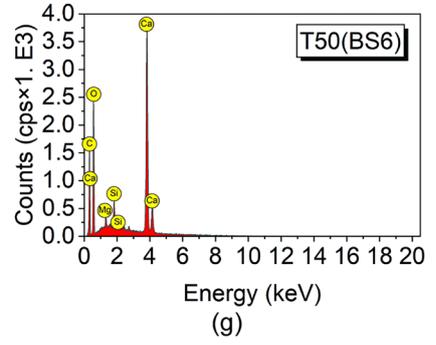
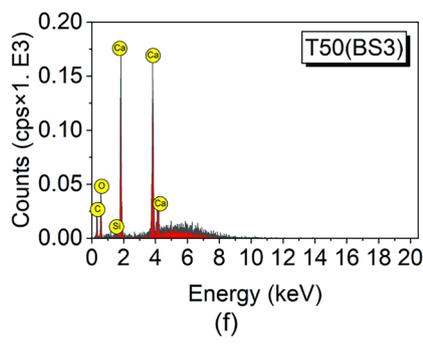
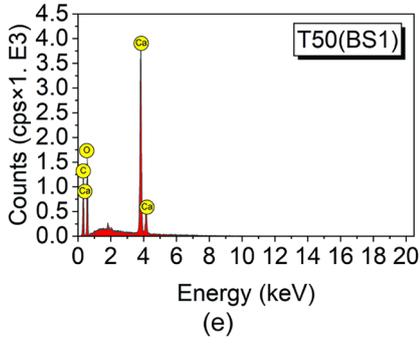
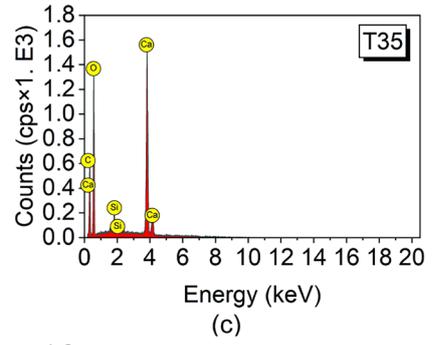
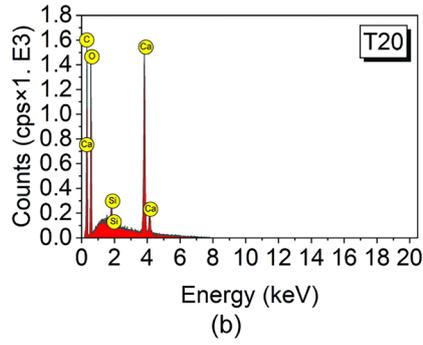
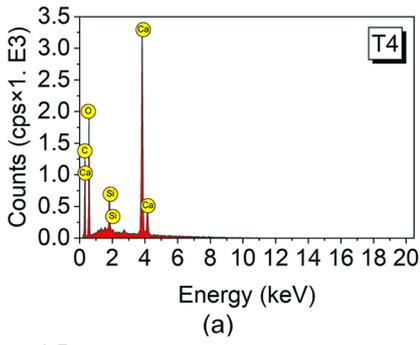
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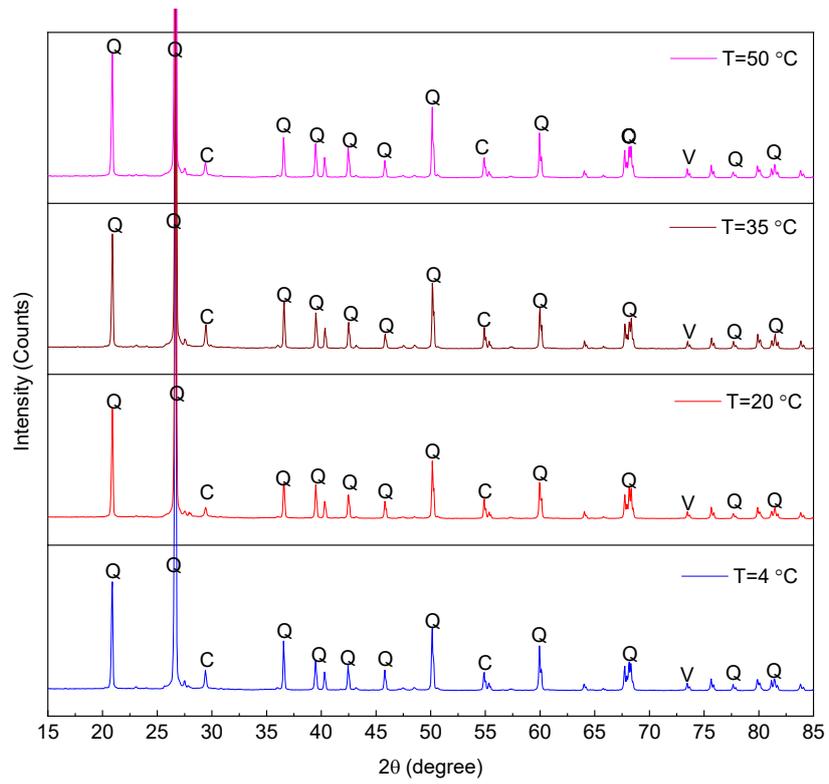
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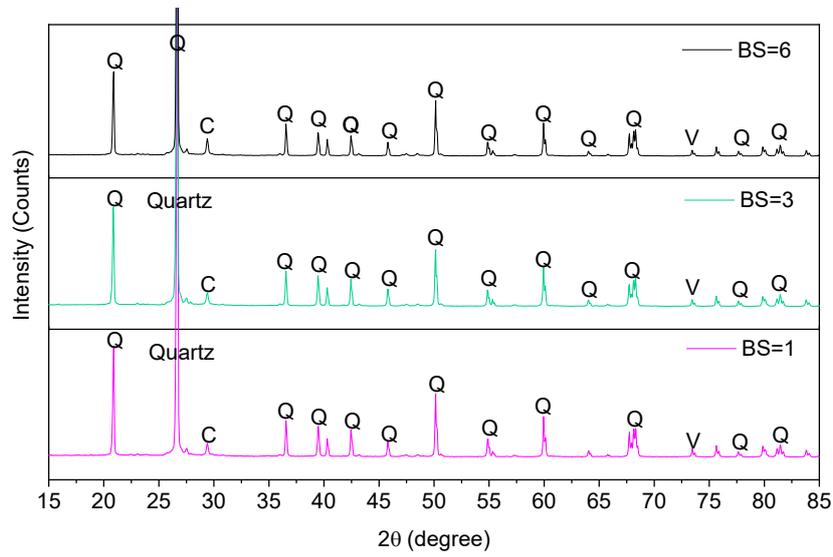


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(b)



(c)

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182 **Figure 12** (a) EDS spectrum of specimens treated at different temperature; (b and c) The XRD results of

183 biocemented sand at different temperatures: Q indicates Quartz, Ca indicates calcite.

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