

RESEARCH ARTICLE

Biomimetic mineralization of 3D-printed polyhydroxyalkanoate-based microbial scaffolds for bone tissue engineering

Supplementary File

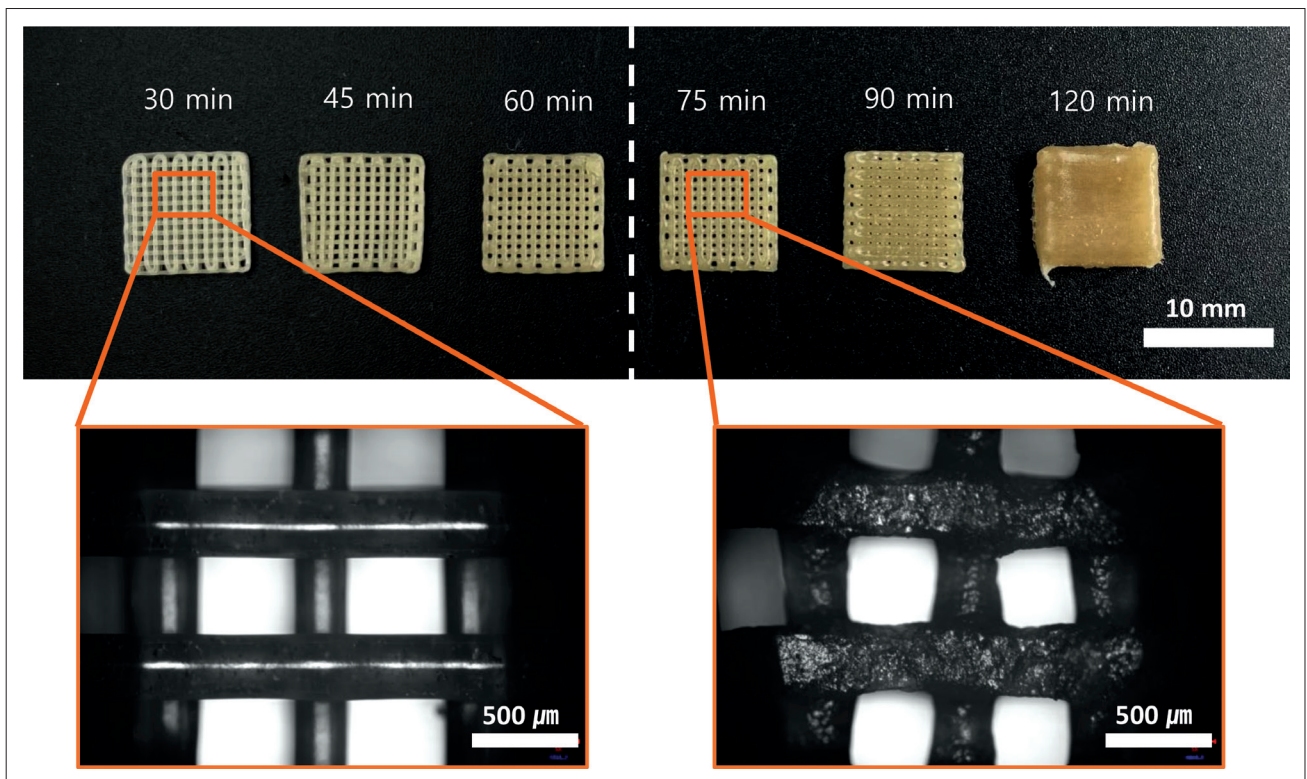


Figure S1. Representative images of thermal denaturation of PHA that occurs when printing at a temperature of 180°C. As a result of thermal denaturation, the color of the printed PHA darkened after approximately 60 min, and the surface became uneven. Moreover, due to the reduction in viscosity, the strand became thicker when the same pneumatic pressure of 500 kPa was applied.

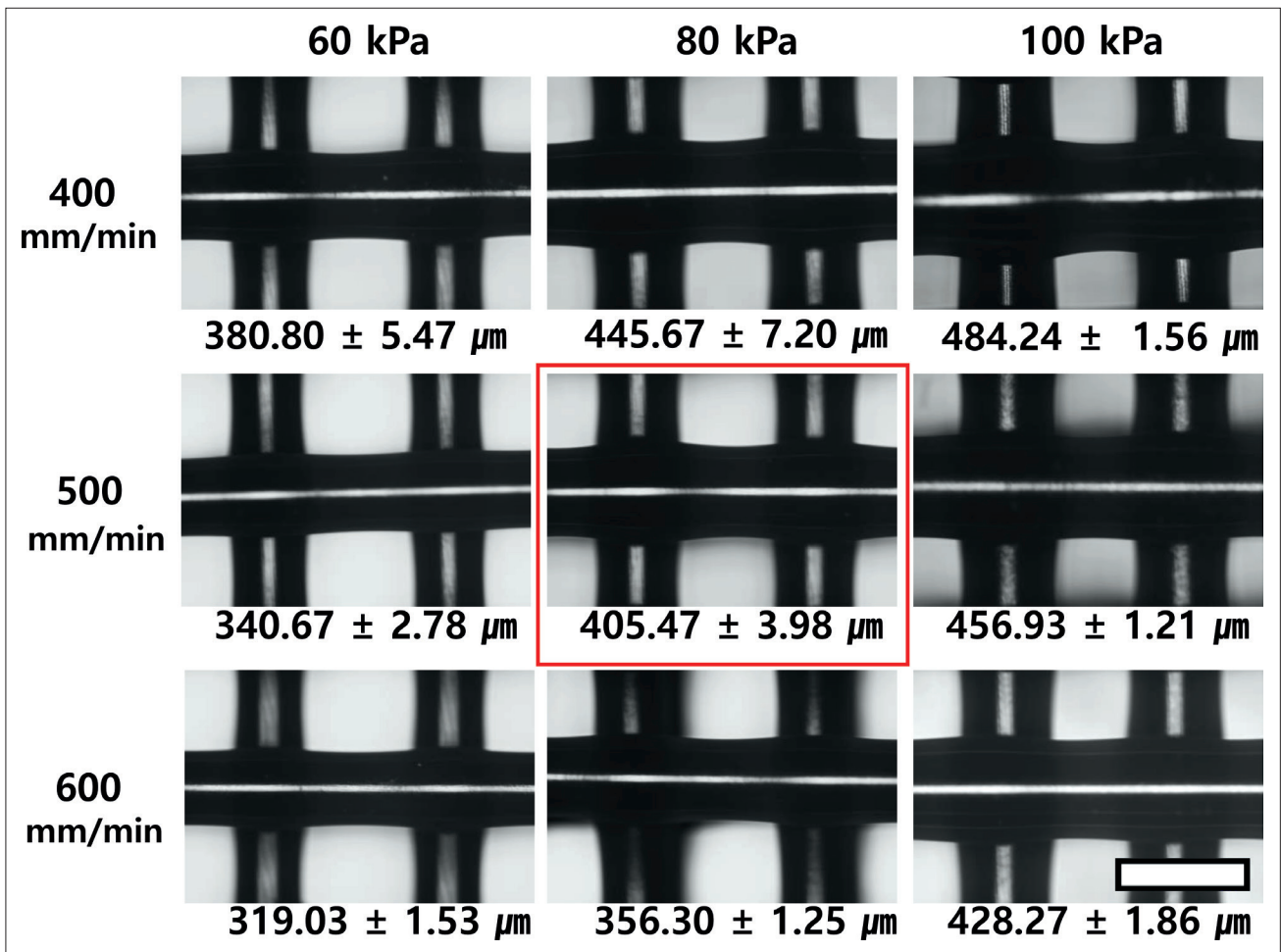


Figure 2. Representative images of PHA printability test at different feed rates and pressures. As the printing speed increased and the pressure decreased, the strand tended to become thinner in size. At the condition of 80 kPa and 500 mm/min, a strand size of $405.47 \pm 3.98 \mu\text{m}$ was observed, which closely matched the nozzle size of 400 μm .