

## Supporting information

### **A biodegradable functional water-responsive shape memory polymer for biomedical applications**

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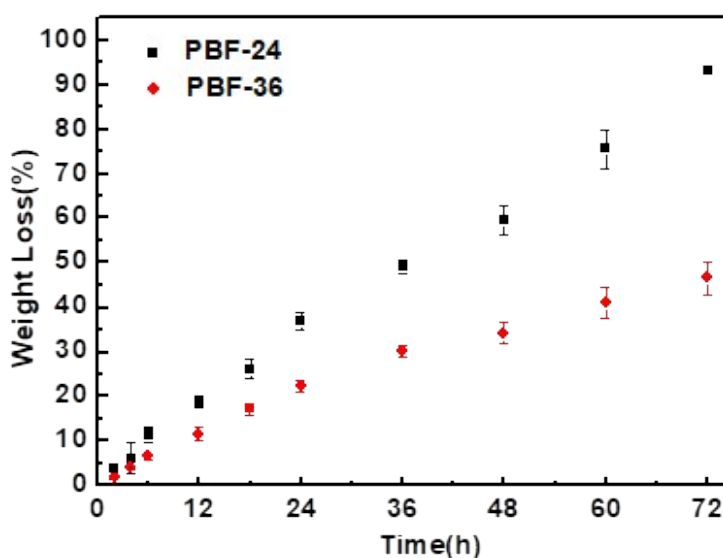
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### ***In vitro* degradation of PBF scaffolds in high concentration of lipase solution**

The *in vitro* enzymatic degradation test was performed in DPBS containing lipase enzyme from *Thermomyces lanuginosus* (100000 U g<sup>-1</sup>, Sigma) at an activity of 8000 U mL<sup>-1</sup>. A cylindrical PBF scaffold (12 mm diameter, 8 mm height) was weighted put in 5 mL of DPBS with lipase enzyme, and incubated at 37 °C. The sample was retrieved, washed with distilled water, and dried every 6 h. The degree of degradation was determined by the dry-weight change. The average values and errors were calculated from at least three independent data for each specimen.

PBF scaffolds exhibited a good biodegradability. A total of  $93.2 \pm 0.87\%$  mass of PBF-24 scaffolds was lost within 72 h (Fig. S1). Compared to PBF-24 scaffolds, PBF-36 scaffolds exhibited slower degradation with a mass loss of  $46.6 \pm 3.85\%$  within 72 h likely due to the higher crosslink density.



**Fig. S1** *In vitro* enzymatic degradation of PBF scaffolds in lipase DPBS solutions at 37 °C.