



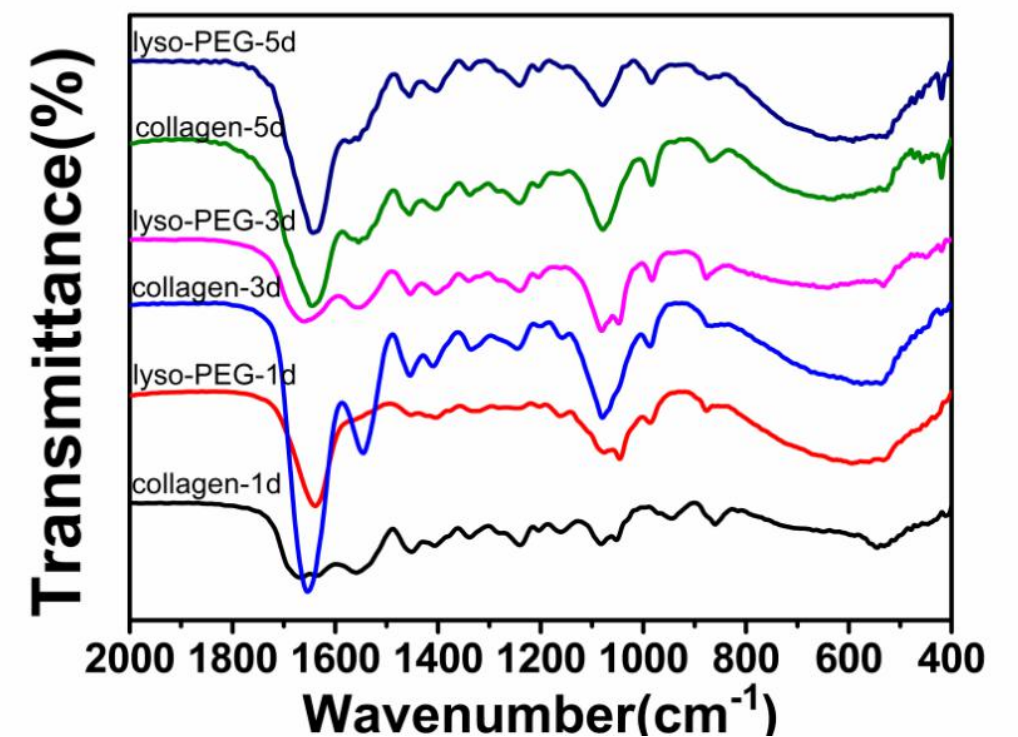
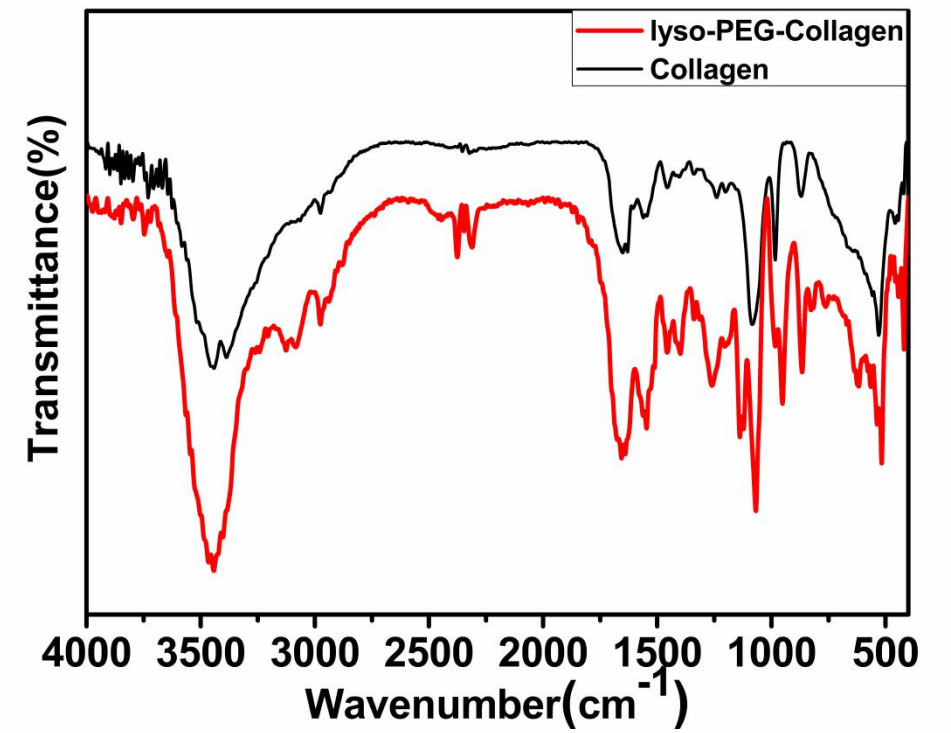
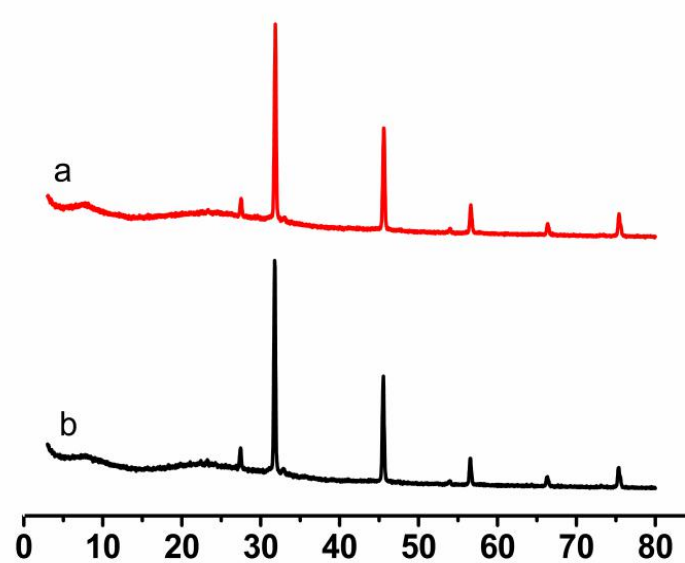
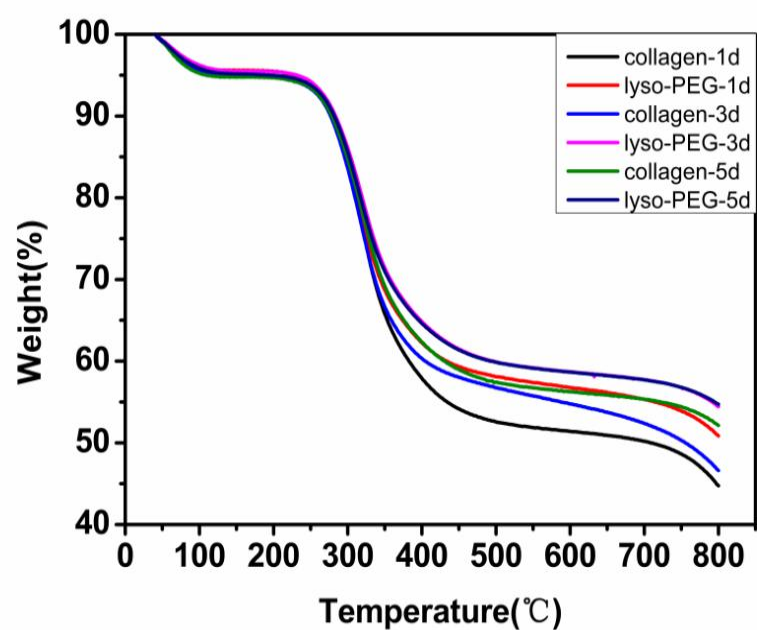
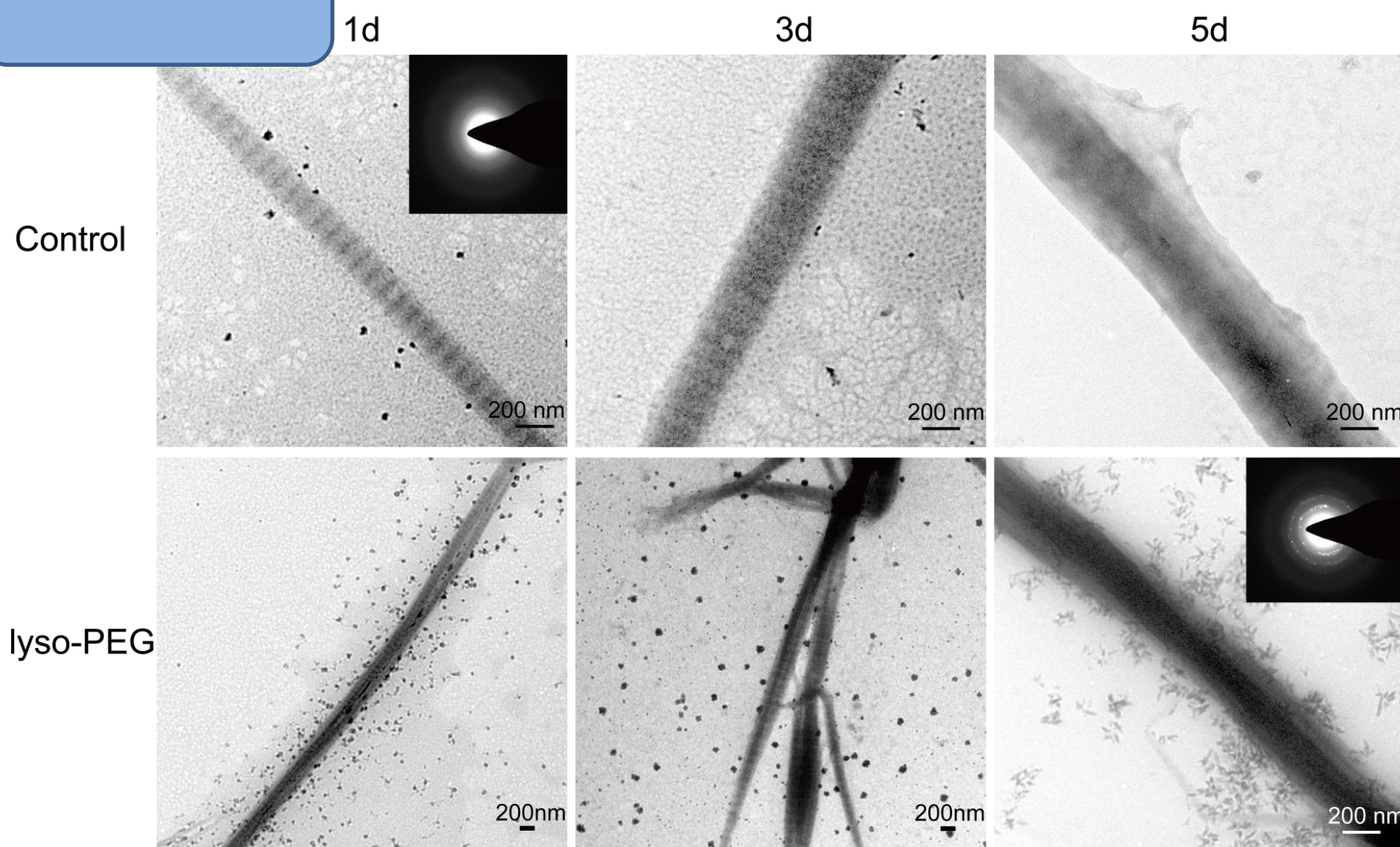
Objective:

We found that amyloid-like protein aggregates---lysozyme (lyso) conjugated with poly(ethylene glycol) (PEG) (lyso-PEG) can significantly promote the intrafibrillar mineralization of collagen, shorten the time of intra-mineralization and increase the strength of internal mineralization.

Methods:

Prepare lyso-PEG solution and Carboxymethyl chitosan /amorphous calcium phosphate (CMC/ACP) solution respectively. Mix the acidic collagen solution into the dialysis bag and place it in the PBS buffer. Then, the prepared lyso-PEG is added to the dialysis bag and the collagen solution separately. After mixing, CMC/ACP biomimetic mineralization solution is added, and the mineralized collagen is obtained by mineralization at different times and freeze-dried to form a collagen scaffold.

Results:



TEM, SAED, XRD confirms the lyso-PEG can bind and modify type I collagen. At the same time, with the extension of lyso-PEG modification time, ACP nano particles can enter collagen after collagen self-assembly to achieve intra-mineralization of collagen fibrils. The FTIR infrared spectrogram shows that the pure collagen scaffold presents three representative characteristic peaks of collagen; TGA analysis shows that the mineralized collagen scaffold after lyso-PEG modification has a higher inorganic content. Above all results shows that a more promising convenient method for preparation of mineralized collagen scaffold.