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Development of biomimetic scaffolds for controlled release of bioactive agent

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Osteogenic factors are a must have feature of bone regeneration scaffolds. Here we present a biomimetic delivery scaffold that is directly translatable to clinical applications, integrating multiple intricate factors in an orthopedic implant that is easy to fabricate and adopt in the surgical setting. The straightforward preparation of a microporous bio-active scaffold designed for sustained bio-agent release is presented. Chitosan combined with osteoconductive bio-ceramics form the basis of the scaffold architecture. The sustained release of Growth Factors (GF) for bone repair after trauma or nonunion fractures is demonstrated. An *in situ* crosslinking step provides a unique route to overcome the low GF stability and short half-life challenges under physiological conditions. High initial burst release is prevented with effective prolonged delivery demonstrated. The scaffold crosslinking reaction, mechanical properties and degradation profile characterization will be described. The bioactive bone regeneration implant presents a substantial list of essential criteria including biocompatibility, biodegradability, micro/nano-architectural physical cues and holds a great promise for therapeutic bone tissue repair.

Biography

Farah Alwani Azaman has completed her Bachelor's degree in Science in Industrial Chemical Technology from Universiti Sains Islam Malaysia. She is currently pursuing her Master's degree at Athlone Institute of Technology, Ireland in Polymer Engineering. Her research work is in fabricating biomimetic bone scaffolds.

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