Supporting Information

Anisotropic expansion effect of Sr doping on crystal structure of hydroxyapatite

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Table S1. The quantities of reactants of Sr-HA samples.

Samples	x	Formula	SrO (mol)	MCPM (mol)	$Ca(OH)_2$ (mol)
Sr2-HA	2	$Ca_8Sr_2(PO_4)_6(OH)_2$	0.008	0.012	0.02
Sr1-HA	1	$Ca_9Sr(PO_4)_6(OH)_2$	0.004	0.012	0.024
Sr0.1-HA	0.1	$Ca_{9.9}\ Sr_{0.1}(PO_4)_6(OH)_2$	0.0004	0.012	0.0276
Sr0.01-HA	0.01	$Ca_{9.99}\ Sr_{0.01}(PO_4)_6(OH)_2$	0.00004	0.012	0.02796
Sr0.001-HA	0.001	$Ca_{9.999}Sr_{0.001}(PO_4)_6(OH)_2$	0.000004	0.012	0.027996
HA	0	$Ca_{10}\ (PO_4)_6(OH)_2$	0	0.012	0.028

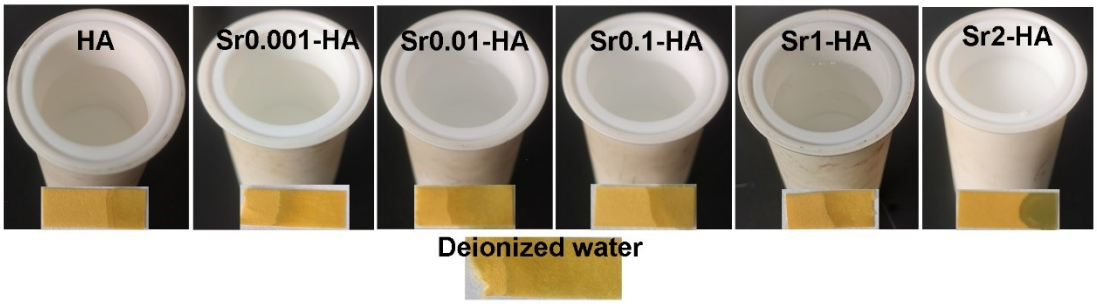

Figure S1. The appearance and pH level measurement of supernatant after synthesis of Sr-HA by pH indicator strips.

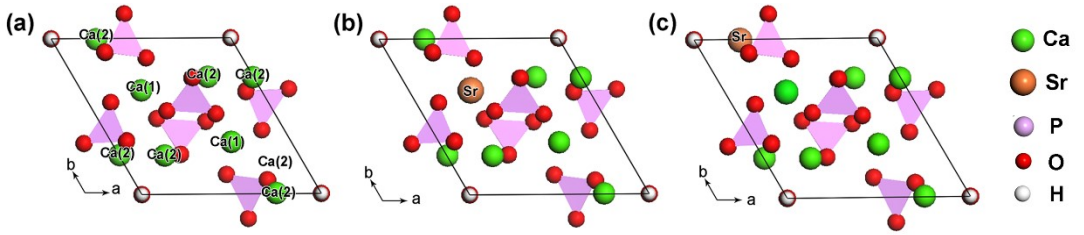

Figure S2. (a) The crystal structure of HA and two Ca positions observed along c-axis: Ca(1) at 4f site and Ca(2) at 6h site. (b) The crystal structure of Sr1-HA [$Ca_9Sr(PO_4)_6(OH)_2$] with Sr substituted for Ca(1) site. (c) The crystal structure of Sr1-HA with Sr substituted for Ca(2) site.

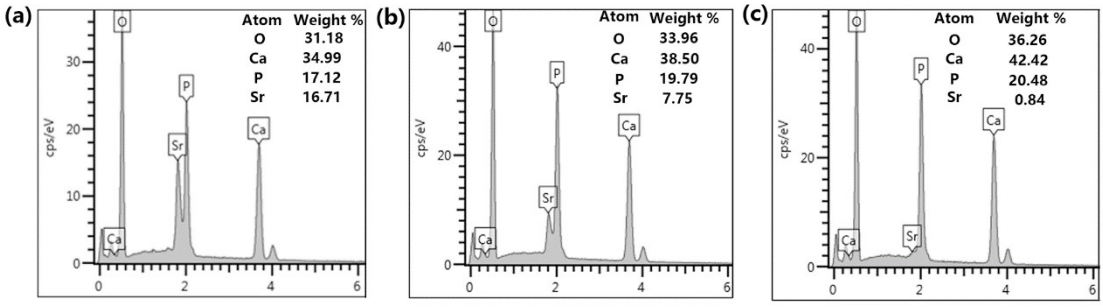

Figure S3. EDX spectrum and chemical composition of (a) Sr2-HA, (b) Sr1-HA and (c) Sr0.1-HA.

Table S2. Sr contents in Sr-HA samples measured by AAS and EDX.

Samples	Sr contents
Sr0.001-HA	75.58±9.91 ppm
Sr0.01-HA	708.58±26.62 ppm
Sr0.1-HA	0.71±0.13 wt%
Sr1-HA	7.84±0.53 wt%
Sr2-HA	16.54±0.44 wt%

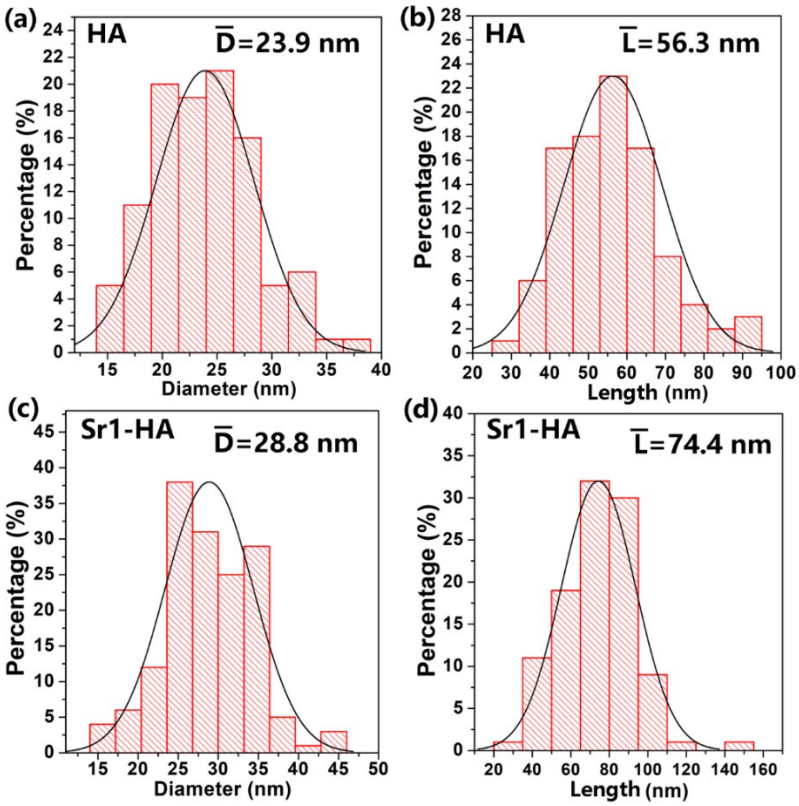

Figure S4. Particle Size Distribution of HA and Sr1-HA samples. (a) Diameter and (b) length of HA particles. (c) Diameter and (d) length of Sr1-HA particles.