

# THE EFFECT OF CALCIUM CHLORIDE CROSSLINKING ON PROPERTIES OF SILK SERICIN/PECTIN/CLAY AEROGEL

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Clay aerogel is a porous solid material with an extremely low density and high surface areas. It is usually fabricated from an environmentally benign freeze-drying method and widely used for adsorbent application. One of the disadvantages of clay aerogel is its fragility, thus silk sericin and calcium chloride ( $\text{CaCl}_2$ ) crosslinked pectin were chosen to improve not only the mechanical strength but also the swelling behaviour of clay aerogel. Therefore, the aim of this research is to study the effects of  $\text{CaCl}_2$  on the properties of silk sericin/pectin/clay aerogel. The studied  $\text{CaCl}_2$  concentrations were 0.0005, 0.001, 0.002, and 0.003 mol  $\text{Ca}^{2+}$  per gram pectin. According to the results, density increased with the addition of cations but still be in the range of clay aerogel density. The mechanical properties showed that 0.002  $\text{Ca}^{2+}$  per gram pectin possessed the highest compressive modulus. The surface area investigated by Brunauer–Emmett–Teller (BET) method decreased as the  $\text{CaCl}_2$  concentrations were increased. The morphology of aerogels from scanning electron microscopy (SEM) exhibited the rougher surfaces. Moreover, the observed swelling behaviour in water was less with  $\text{Ca}^{2+}$ .

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