

Synthesis: The fresh *Citrus maxima* peels were washed several times and then milled. The peels (12 g) were boiled with 100 mL ultrapure water at 353 K for 80 min. The extracts were centrifuged and passed through 0.45 μm filter membranes, then stored in a refrigerator at 277 K. Fe nanoparticles were synthesized by adding the extracts to 0.10 mol/L FeCl_3 solution in a 3:1 volume ratio at room temperature. The immediate color changing from yellow to black indicated the formation of Fe nanoparticles. The obtained Fe NPs were expressed as Cm-Fe- NPs. Fe^{3+} solution and extracts were mixed in different volume ratios to synthesize nanoparticles, and then these synthesized nanoparticles were used to treat Cr(VI) solution. Removal experiments were carried out using 2 mL Cm-Fe-NPs to remove 3 mL 100 mg/L Cr(VI) solution in the 10 mL plastic centrifuge tubes. Then the tubes were agitated at 250 r/min and 298 K. The quantification of Cr(VI) was performed using the diphenylcarbazide

Results: As shown in the TEM images, the sizes of the synthesized particles ranged from 10 to 100 nm whose shapes were irregular(Fig. 2a,b). These nanoparticles were capped by biomolecules present in the peel extracts which may improve their dispersion and stability [12]. EDS patterns were illustrated in Fig. 2(c), which contained the intense peaks of Fe, N, C and O elements. The presence of the Fe element (11.08%) presumably inferred that Fe nanoparticles have been synthesized. The presence of N, C and O elements confirmed that some biomolecules covered on the Fe NPs' surface corresponding to the TEM images.

Conclusion: In this study, Cm-Fe-NPs were prepared using *Citrus maxima* peel extracts successfully and the green synthetic Fe NPs were characterized. Based on the characterization results, the Ec-Fe-NPs were surrounded by biomolecules with diameters in a range of 10– 100 nm. The green synthesis methods of Fe NPs using *Citrus maxima* peel extract were feasible which recycled the peel wastes sufficiently and created economic benefits.

