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Abstract	:	The purpose of this study is to study the characterization of beads photocatalyst by using infrared spectroscopy as the identification of chemical bonding in mixtures. This work involves the physical characterization of magnetic cobalt bead photocatalyst, cobalt bead photocatalyst and magnetic bead photocatalyst using FTIR spectroscopy. The spectra for each sample were analyzed to compare the different spectra with each other. Absorption spectra of the samples were recorded using Nicolet iS10 FTIR spectrophotometer at the wavenumber range from 4000 to 400 cm⁻¹ where potassium bromide (KBr) was used as a beam splitter. The results showed the spectrum of the Co₃O₄/Fe₃O₄-beads sample follows the spectrum of both the Co₃O₄-beads samples and the samples with magnetic Fe₃O₄-beads nanoparticles, demonstrating the good mixing between the two compounds. Cross-linking significantly improves the mechanical and chemical resilience of a material. In the meantime, cross-linking of bead photocatalyst has been done with a cross-linking chemical, including glutaraldehyde.