

4. Conclusion

Co-Ni-ZnO NPs were successfully synthesized through a facile one-pot sonochemical method. XRD results revealed that all synthesized samples showed a hexagonal wurtzite ZnO structure. Also, Co and Ni ions were successfully doped in to ZnO. In addition, XRD results indicate that the doped ZnO has smaller lattice parameters and reduction in average crystallite size. UV-Vis absorption spectra showed a red shift in doped sample compared to ZnO. The observed red shift of energy gap is explained by sp-d exchange interactions between the band electrons and the localized d-electrons of the Co²⁺ and Ni²⁺ ions. The PL spectra of samples showed less recombination rate of the free excited electrons and holes for the Co-Ni-ZnO NPs. The Co-Ni-ZnO showed an efficient photocatalyst in photodegradation of MO compared with Co-ZnO following the Co and Ni synergistic effect.

Acknowledgements

The authors are thankful to Iran National Science Foundation (INSF) for supporting this project numbered 90005627.

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