



البحث الخامس			
A novel photocatalytic system consists of Co(II) complex@ZnO exhibits potent antimicrobial activity and efficient solar-induced wastewater remediation			عنوان البحث
شارك في البحث ثلاثة باحثين <u>Amr A. Essawy</u> , Amr M. Nassar, Wael A.A. Arafa.			المؤلفون
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**Abstract:** Recently, cobalt complexes have been engaged in contemporary scientific prospects. Thus, this work presents the synthesis of novel cobalt(II) complex (Co<sub>2</sub>L) from Schiff base ligand, N,N'-bis-(5-methoxysalicylidene)-trans-(1,4-cyclohexylenediamine) (H<sub>2</sub>L) and investigates its synergistically catalytic characteristics along with ZnO photocatalyst via synthesis of novel composite Co<sub>2</sub>L/ZnO. The as-synthesized substances were characterized using Fourier transform infrared spectroscopy (FT-IR), mass spectrometer with electrospray ionization source (ESI-MS), UV/vis. spectrophotometric/photoluminescence techniques, thermal gravimetric analysis (TGA), X-ray diffraction (XRD), and transmission electron microscopy (TEM). Co<sub>2</sub>L shows impressive antimicrobial properties compared to a typical antibacterial and antifungal agents, tetracycline and amphotericin B, respectively. The results confirmed that, the loaded cobalt complex photosensitizes ZnO augmenting its solar response and acts as redox mediator revealing marvelous reduction of electrons and holes recombination. Compared with bare ZnO, Co<sub>2</sub>L/ZnO composite exhibited better photocatalytic degradation of methylene blue under solar-irradiation within degradation efficiency 97.7%. The developed composite provides integrity of the optical and structural characteristics. Moreover, it articulates new insights towards the synthesis of low cost, highly stable, and efficient photocatalyst for wastewater remediation.