

The 18th Iranian Chemistry

Aug 30 - Sep1, 2015 Congress
Semnan University
Department of Chemistry

هجدهمین کنگره شیمی ایران

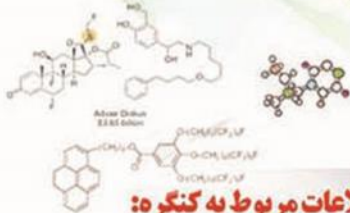
۸-۱۰ شهریور ۱۳۹۴

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دبیرخانه کنگره: سمنان، دانشگاه سمنان،

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تلفن: ۰۲۳۳۳۳۸۳۱۷۸

نمابر: ۰۲۳۳۳۳۸۳۱۷۸

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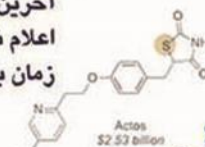
تاریخ های مهم:

شروع ثبت نام و پذیرش خلاصه مقالات: ۹۴/۰۱/۰۵

آخرین مهلت پذیرش خلاصه مقالات: ۹۴/۰۳/۱۵

اعلام نتایج داوری: از ۹۴/۰۴/۱۵

زمان برگزاری: ۸-۱۰ شهریور ۱۳۹۴



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\$2.53 billion



Synthesis of Surface Modified Nano Ferrite Nickel and Investigation on its Antibacterial and Antifungal activities

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Background: Improvements in nanotechnology in the past decayed has created various opportunities for evaluation of biologic effects such as antibacterial and antifungal effects of nanoparticles. Silver nanoparticles have recently attracted much interest due to their distinct properties and potential applications in various fields especially biomedical [1-3].

Methods: Nanocrystalline NiFe₂O₄ samples were prepared by hydrothermal method. The synthesis process was accomplished by metal chloride precursors in ethylene glycol in presence of sodium acetate and ethanolamine. Silver ions were loaded onto the surface of the modified NiFe₂O₄ and reduced to silver crystal by adding NaBH₄. NiFe₂O₄@Ag sample was tested for their antibacterial activity against *Pseudomonas syringe* and *Bacillus subtilis* and antifungal activity against *Alternaria solani* and *Fusarium oxysporum*, respectively. Biological results indicated that the synthesized materials have shown an excellent antibacterial and antifungal activity against both of bacteria and fungi, which their growth were completely inhibited after 24 h contact with NiFe₂O₄@Ag.

Results: The final products were thoroughly characterized by Fourier Transform Infrared Spectroscopy (FT-IR), X-ray powder diffraction (XRD), Field Emission Scanning Electron Microscopy (FE-SEM) along with Energy Dispersive X-ray (EDX) Spectroscopy and thermogravimetric and differential thermal analysis (TG/DTA).

Conclusion: Use of NiFe₂O₄@Ag nanoparticles as an anti microbial agent is recommended in different fields of medicine, food industry and agriculture and can be of importance considering health and economic issues.

Keywords: Hydrothermal; *Pseudomonas syringe*; *Bacillus subtilis*; *Alternaria solani*; *Fusarium oxysporum*.

References

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