

Supplementary Information

Superior UV- light photocatalysts of Nano-Crystalline (Ni or Co) FeWO₄: Structure, Optical Characterization Synthesized by A Microemulsion Method

Sabah. M. Abdelbasir,*# Ahmed Mourtada Elseman,*#, Farid A. Harraz, Yasser MZ Ahmed, Said M. El-Sheikh*, and Mohamed M. Rashad

Central Metallurgical Research & Development Institute (CMRDI), P.O.Box 87 Helwan, 11421, Cairo, Egypt.

*Corresponding author. (S. M. Abdelbasir) Email: sfoda20@hotmail.com (A. M. Elseman) Email: amourtada@cmrdi.sci.eg; and (S. M. El-Sheikh) Email: selsheikh2001@gmail.com

#These authors equally contributed to the work.

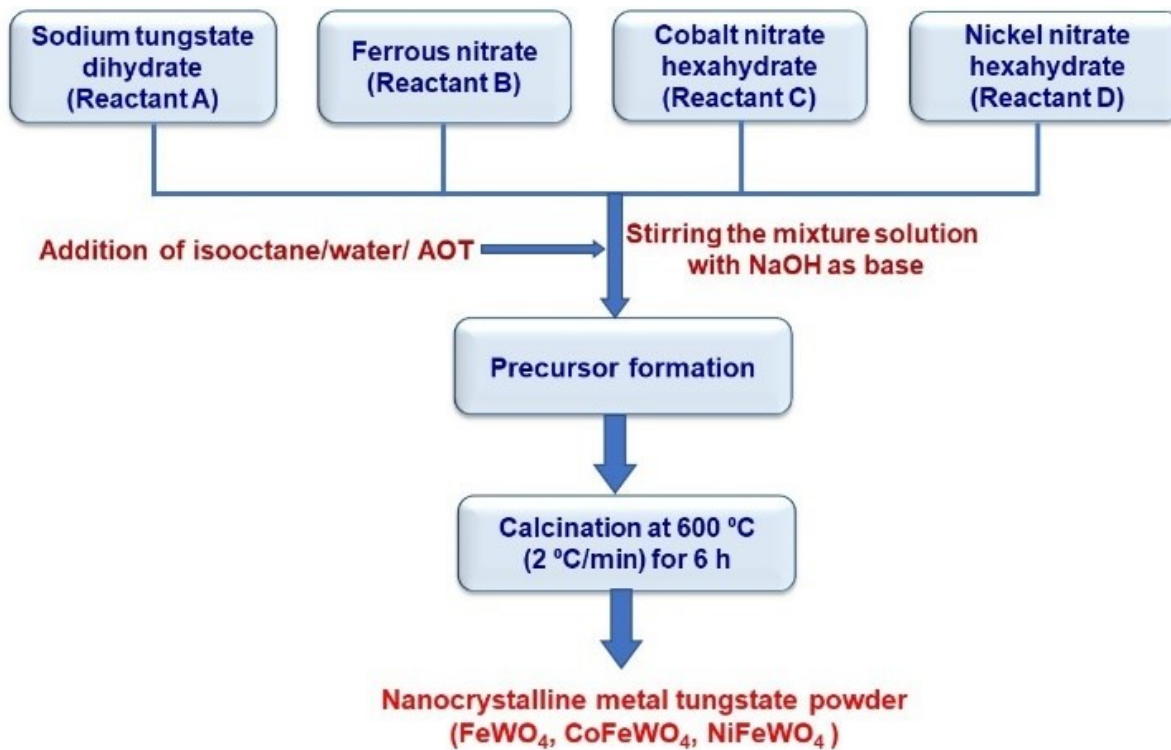


Fig. S1. Flow chart for the production of FeWO₄, CoFeWO₄, and NiFeWO₄ by microemulsion method.

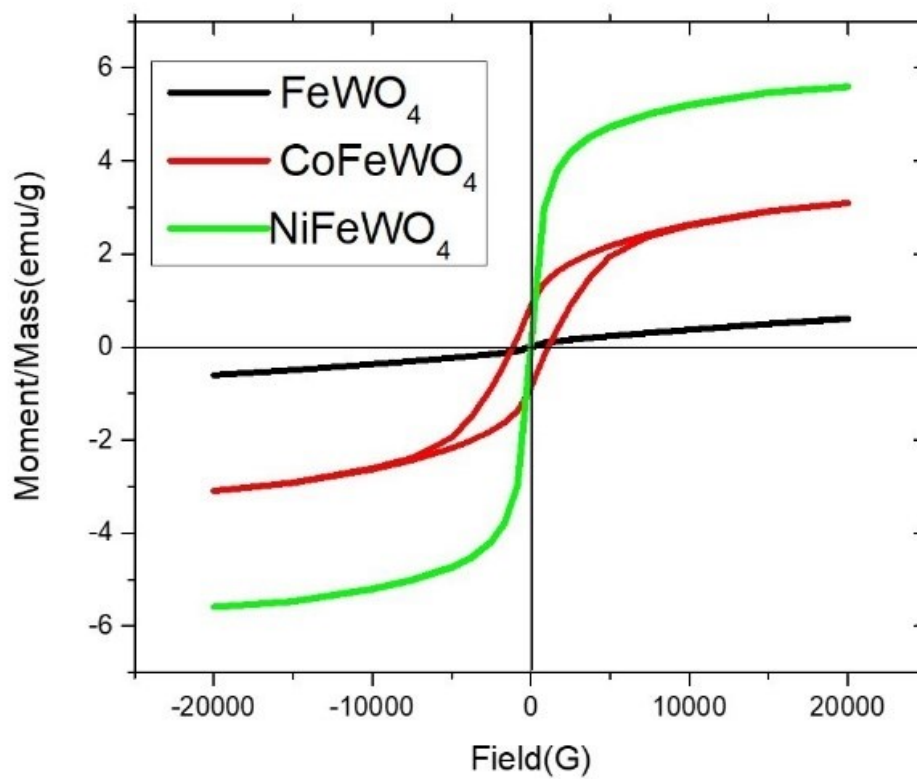


Fig. S2. VSM of FeWO₄, CoFeWO₄ and NiFeWO₄ thin film.

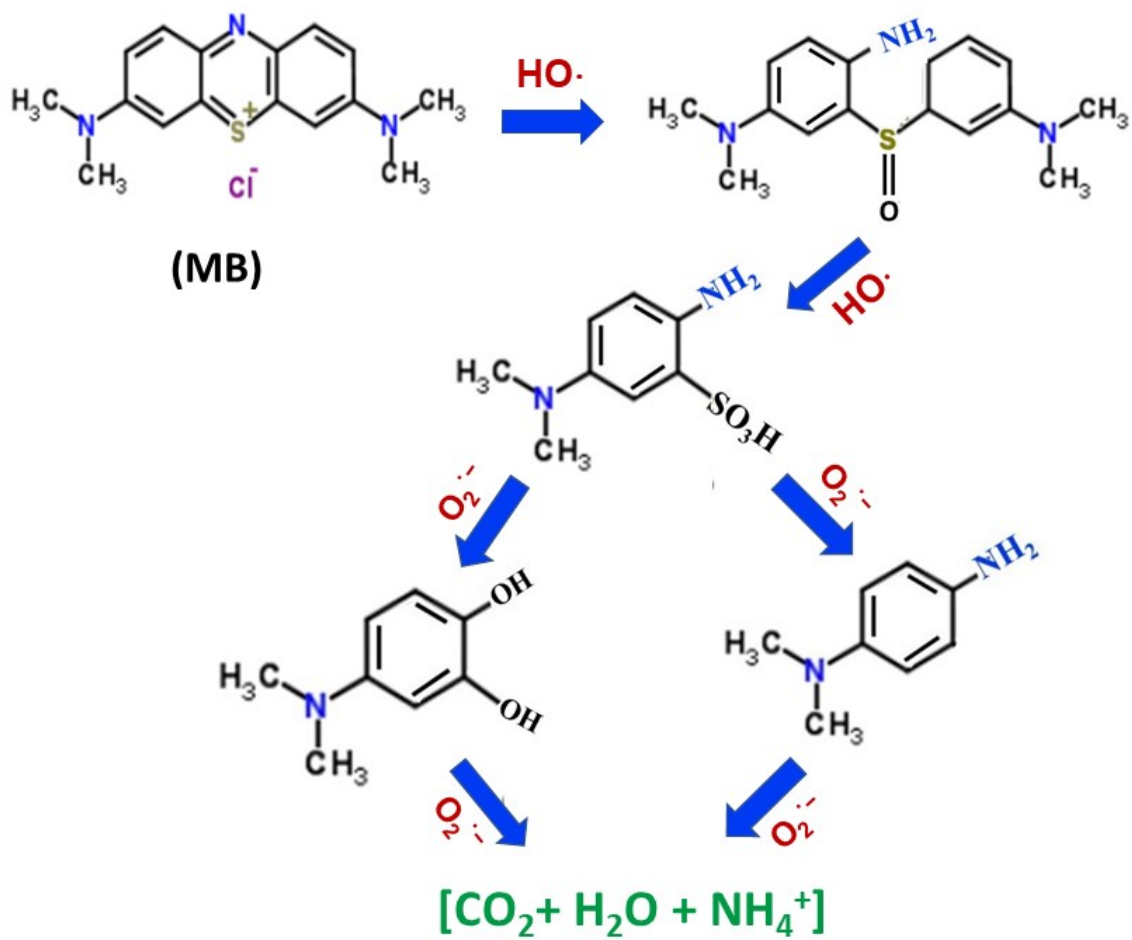


Fig. S3. MB degradation by generated $\cdot\text{OH}$ and $\text{O}_2^{\cdot-}$ radicals.

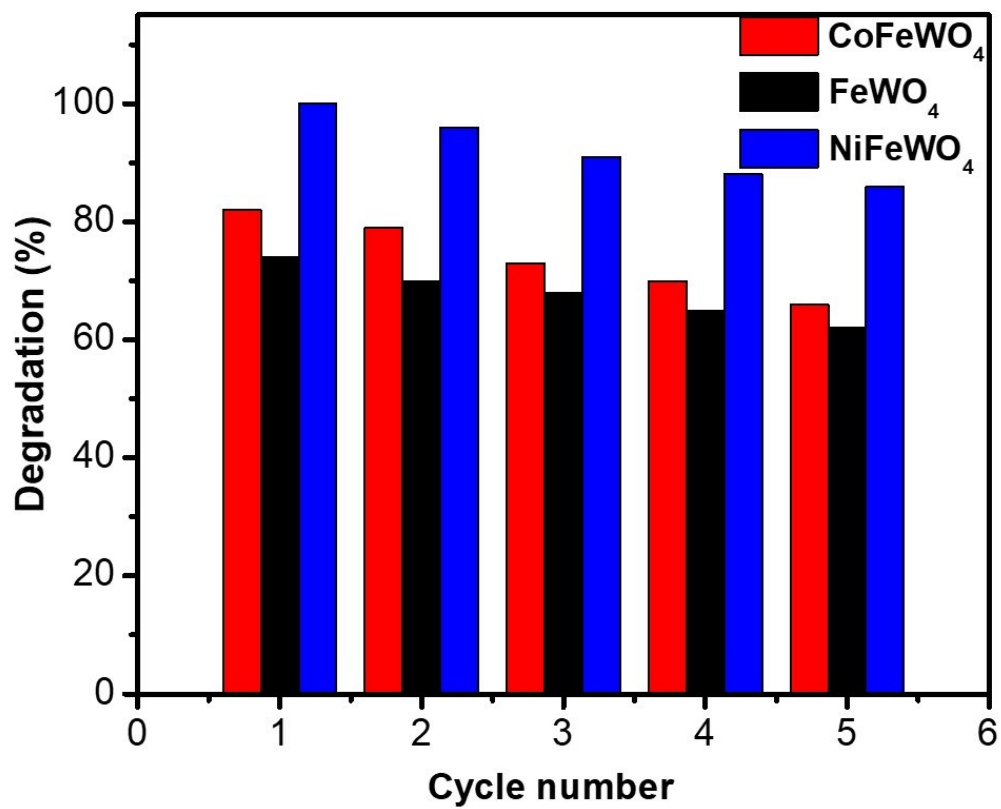


Fig. S4. Recycling experiment of FeWO₄, CoFeWO₄, and NiFeWO₄ samples on the photodegradation MB.

Table S1. Molar ratios of chemicals mandatory for the different metal tungstate precursors to be prepared.

Compound	Assigned as	Metal ion salt (mole)/ Isooctane/water/AOT	Mixed Reactant	Molar ratio	Assigned as	Heat treatment temperature (°C)	Heat treatment Time (hr)
(Na ₂ WO ₄ ·2H ₂ O)	Reactant A	0.1/25/25/0.1	A:B	1:1.2	FeWO ₄	600/2°C/min	6
(Fe(NO ₃) ₂)	Reactant B	0.1 or 0.12/25/25/0.1	A:B	1:1	FeWO ₄	600/2°C/min	6
(Co(NO ₃) ₂ ·6H ₂ O)	Reactant C	0.1:0.1/25/25/0.1	C:A:B	0.5:0.5:1	CoFeWO ₄	600/2°C/min	6
(Ni(NO ₃) ₂ ·6H ₂ O)	Reactant D	0.1/25/25/0.1	D:A:B	0.5:0.5:1	NiFeWO ₄	600/2°C/min	6

Table S2. Comparison of performance characteristics of MWO₄ photocatalysts for the degradation of different pollutants.

Photocatalyst	Target pollutant	Light illumination	Photocatalytic activity	degradation time	Reference
NiFeWO ₄	MB	UV	100%	60 min	<i>Current work</i>
NiWO ₄	MO dye	UV	87%	100 min	1
ZnWO ₄	para-aminobenzoic acid	UV-A	100 %	160 min	2
ZnWO ₄	MB Rh-B	UV	100%	60 min 25 min	3
BaWO ₄	Methyl thioninium chloride (MTC) dye	UV	75% at pH=10	30 min	4
CuWO ₄	MO	UV	75%	90 min	5
Pr ₂ (WO ₄) ₃	MB	UV	99.9%	60 min	6
CuWO ₄ /ZnO	MB	sunlight	98.9	120 min	7

Supplementary references

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