



1st BALKAN CONFERENCE on BIOMEDICAL AND CANCER RESEARCH

Balkan.BMCR 2026

**ABSTRACT BOOK
KNJIGA SAŽETAKA**

September 03–05, Foča, Bosnia and Herzegovina

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Molecular and cellular medicine, Biology, Bioinformatics, Immunology, Microbiology, Oncology, Chemistry, Biotechnology, Experimental and clinical medicine

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ФАКУЛТЕТ МЕДИЦИНСКИХ НАУКА УНИВЕРЗИТЕТА У КРАГУЈЕВЦУ (Србија)
ЦЕНТАР ЗА МОЛЕКУЛСКУ МЕДИЦИНУ И ИСТРАЖИВАЊЕ МАТИЧНИХ ЋЕЛИЈА



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FOREWORD

We present to you an abstract book of the 1st BALKAN CONFERENCE on BIOMEDICAL AND CANCER RESEARCH (Balkan.BMCR 2026), dedicated to the latest achievements, challenges, and perspectives in the fields of biomedicine and oncology. Held from September 03-05 2026, in Foca (Bosnia and Herzegovina), this meeting brought together leading scientists, clinicians, researchers, and young professionals from across the globe with a shared mission- to advance the fight against malignant diseases through the synergy of fundamental science and clinical practice.

The international character of this meeting, featuring participants from over 10 countries, underscores once again that cancer knows no borders. Global health challenges can only be overcome through collective efforts, open dialogue, and cross-border scientific collaboration. The exchange of ideas and the establishment of new research networks during this event represent an invaluable asset for the further advancement of medical science.

We believe that the conclusions we reach will make a significant contribution to our academic community.

The Organizing and Scientific Committees extend their deepest gratitude to all the authors for their exceptional scientific contributions, and to the institutions and sponsors whose support made this significant meeting possible.

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P-026 Green synthesis of metal nanoparticles using plant extracts: comparison of Ag, ZnO and CuO systems and their potential biomedical applications

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Green synthesis of metal nanoparticles using plant extracts represents a significant experimental challenge, as it requires careful optimization of reaction conditions such as pH, temperature, and the ratio of plant extract to metal precursors. Nevertheless, this approach offers an environmentally friendly and sustainable route for the production of nanomaterials with considerable application potential, particularly in the field of medicine. This paper presents a comparative analysis of the green synthesis of silver, zinc, and copper nanoparticles, with emphasis on differences in formation mechanisms, particle characteristics, stability, and potential applications. Special attention is given to their biomedical potential, which was systematically evaluated. The study is primarily based on the authors' experimental results, including both published and unpublished data, supported by relevant literature. Nanoparticle formation was monitored by UV–Vis spectroscopy, while interactions between plant biomolecules and nanoparticle surfaces were examined using FTIR analysis. Particle morphology and size were determined by SEM and TEM techniques. The results indicate that silver nanoparticles are predominantly obtained in elemental form, whereas zinc and copper tend to form oxide nanoparticles (ZnO and CuO) due to their higher susceptibility to oxidation. Compared to ZnO and CuO, silver nanoparticles exhibit faster formation kinetics, narrower size distribution, and improved colloidal stability. Overall, all investigated nanoparticles demonstrate significant potential for biomedical applications.

Green Synthesis of Metal Nanoparticles Using Plant Extracts Comparison of Ag, ZnO and CuO Systems and Their Potential Biomedical Applications



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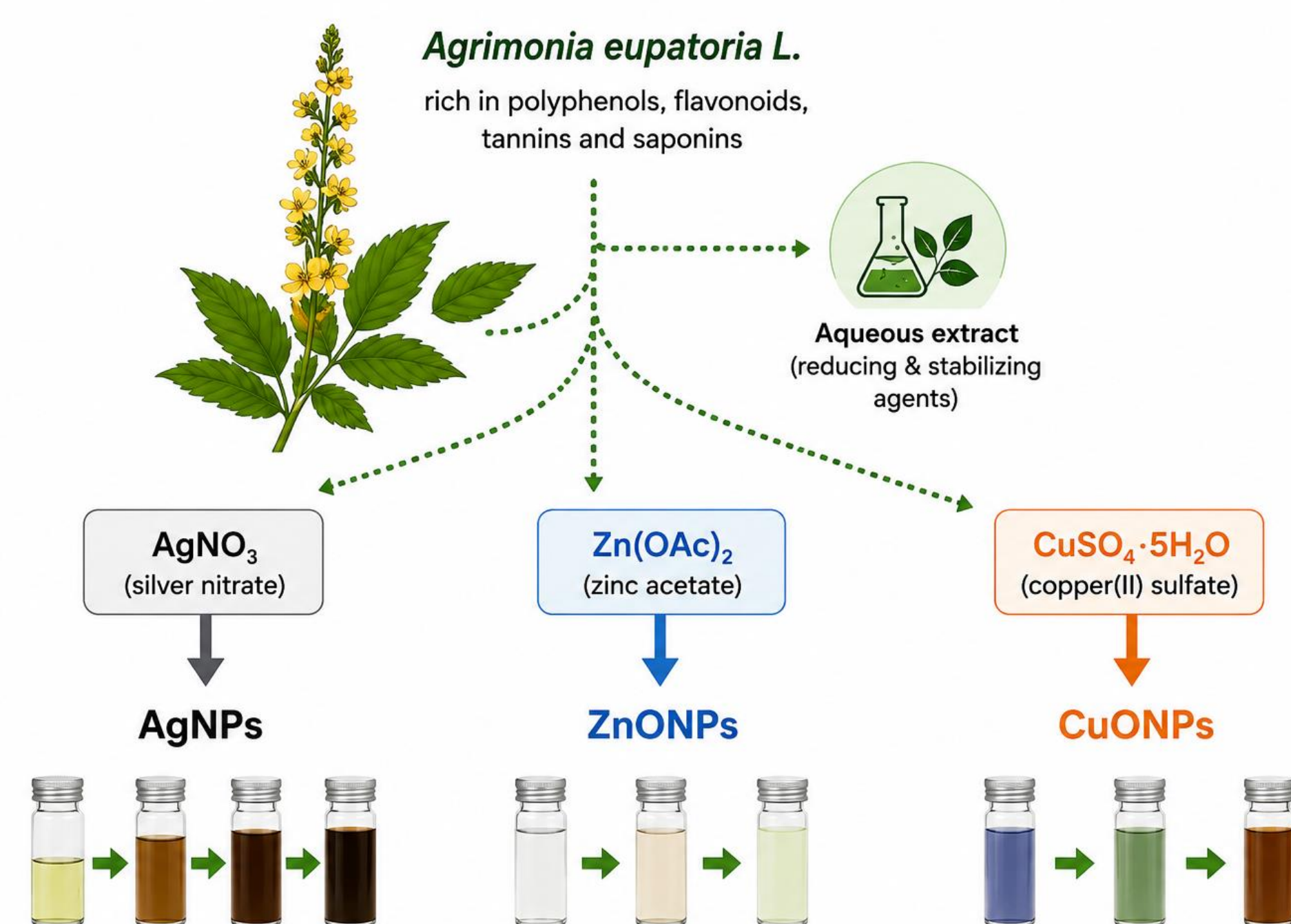


УНИВЕРЗИТЕТ
У КРАГУЈЕВЦУ



WHY GREEN SYNTHESIS?

- ✓ Eco-friendly and sustainable approach
- ✓ Plant biomolecules act as reducing and stabilizing agents
- ✓ Simple, cost-effective, and biocompatible method
- ✓ Avoids the use of toxic chemicals and harsh reaction conditions



Corresponding author

Ana S. Kesić

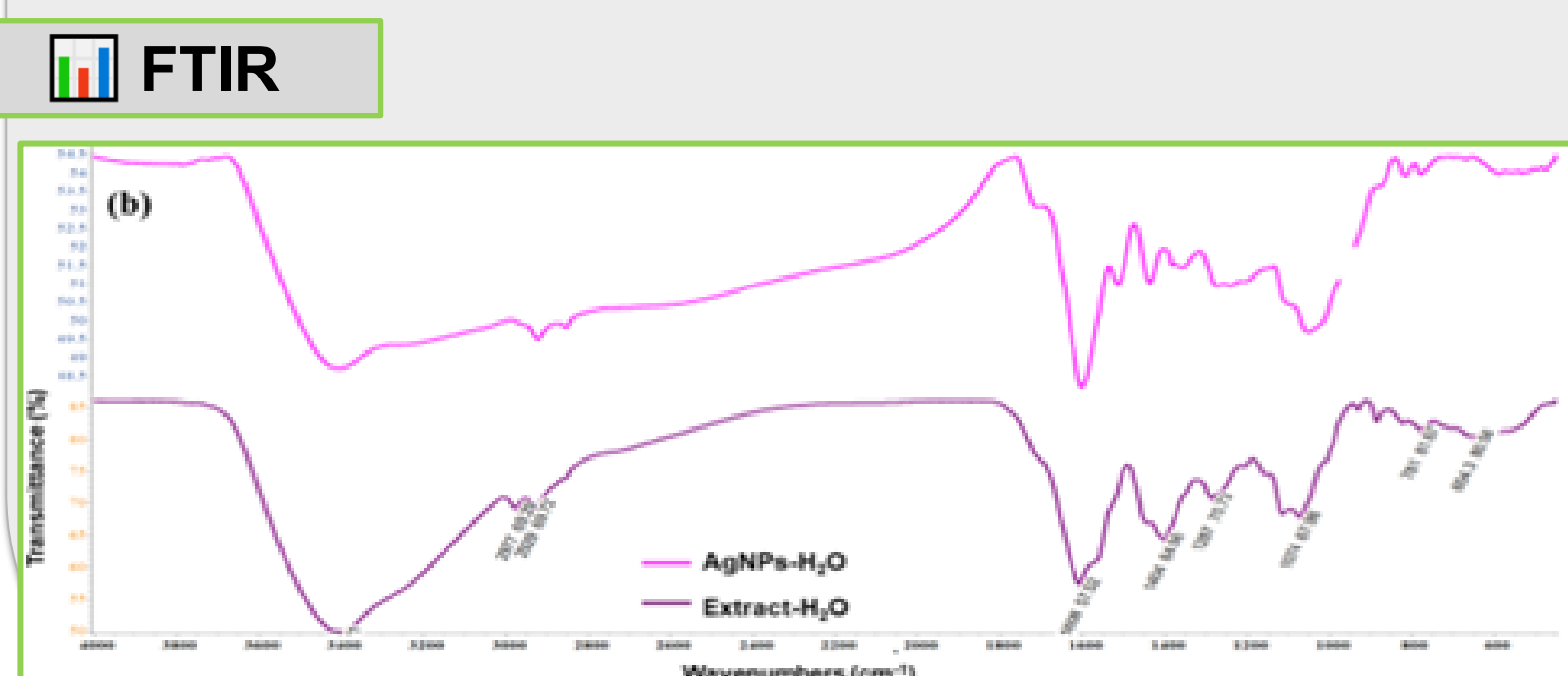
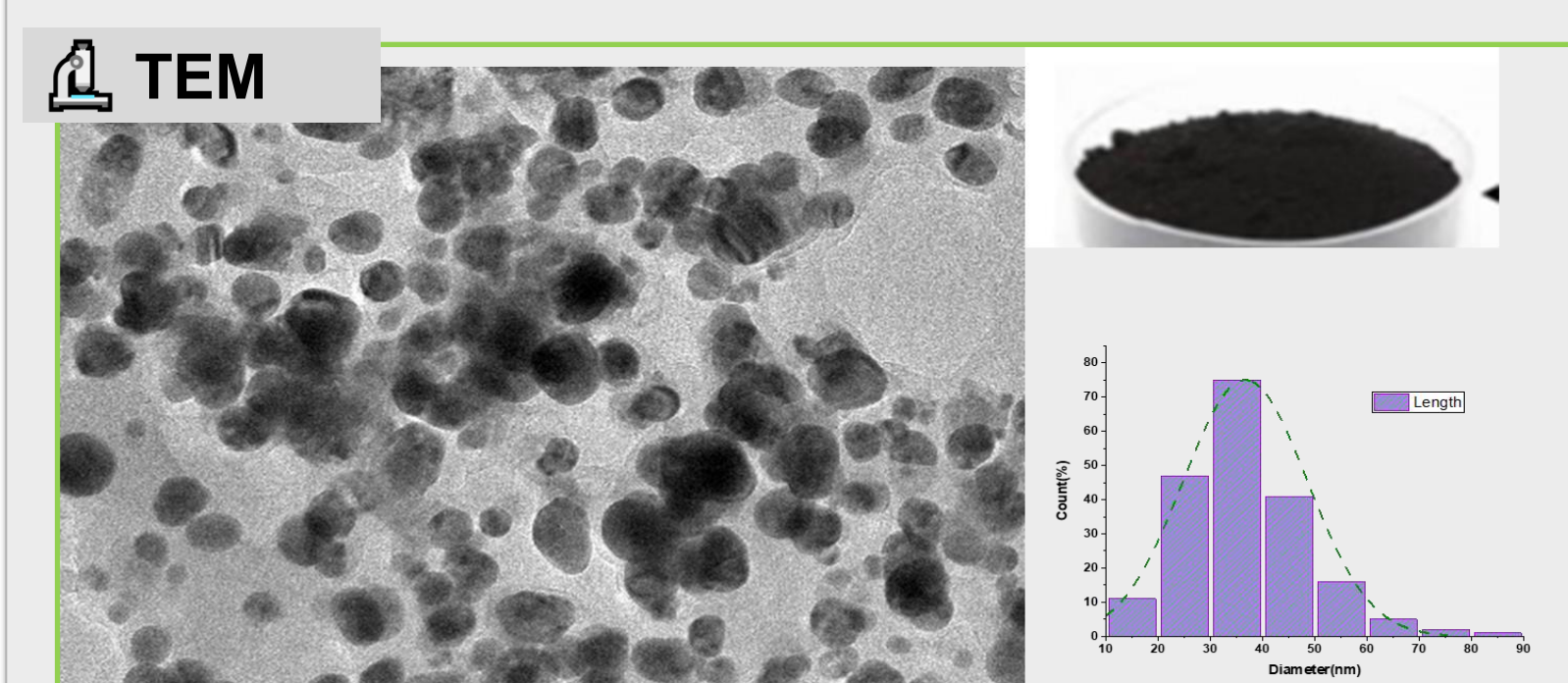
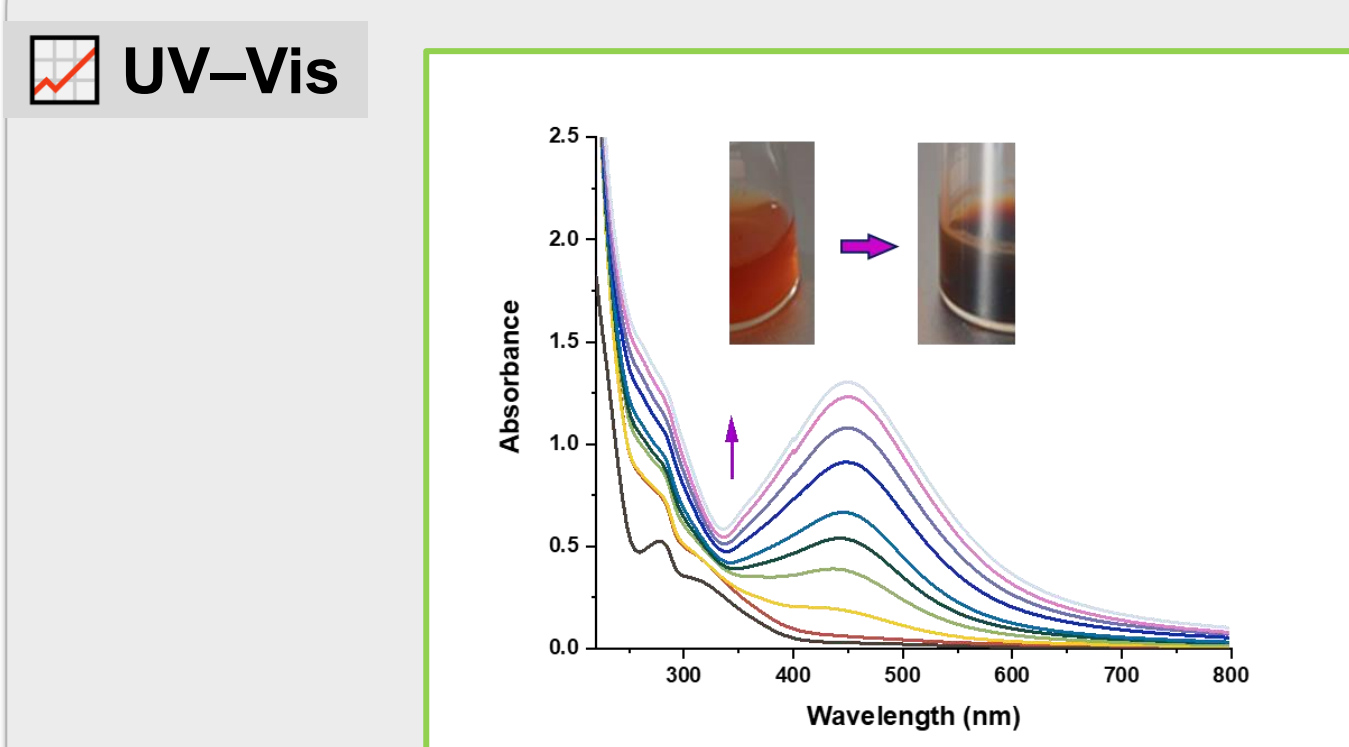
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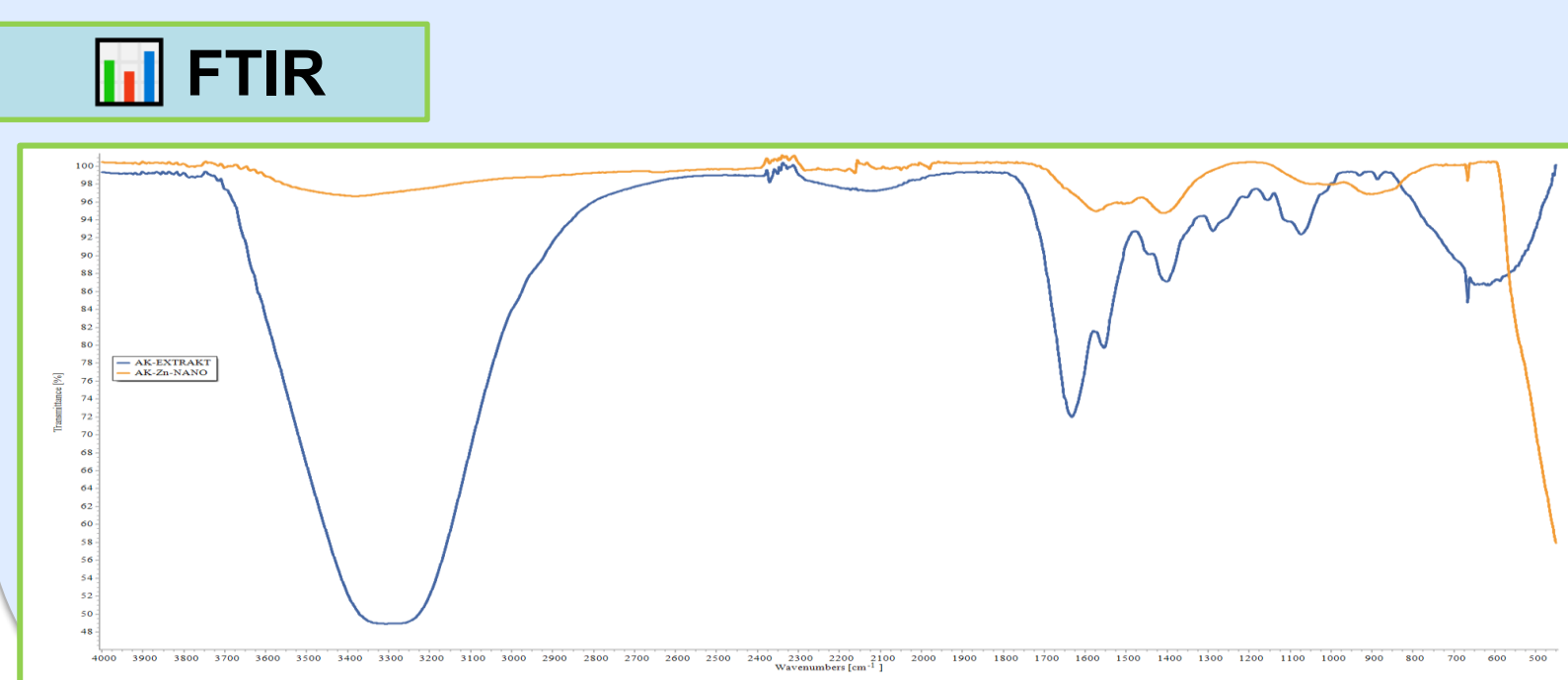
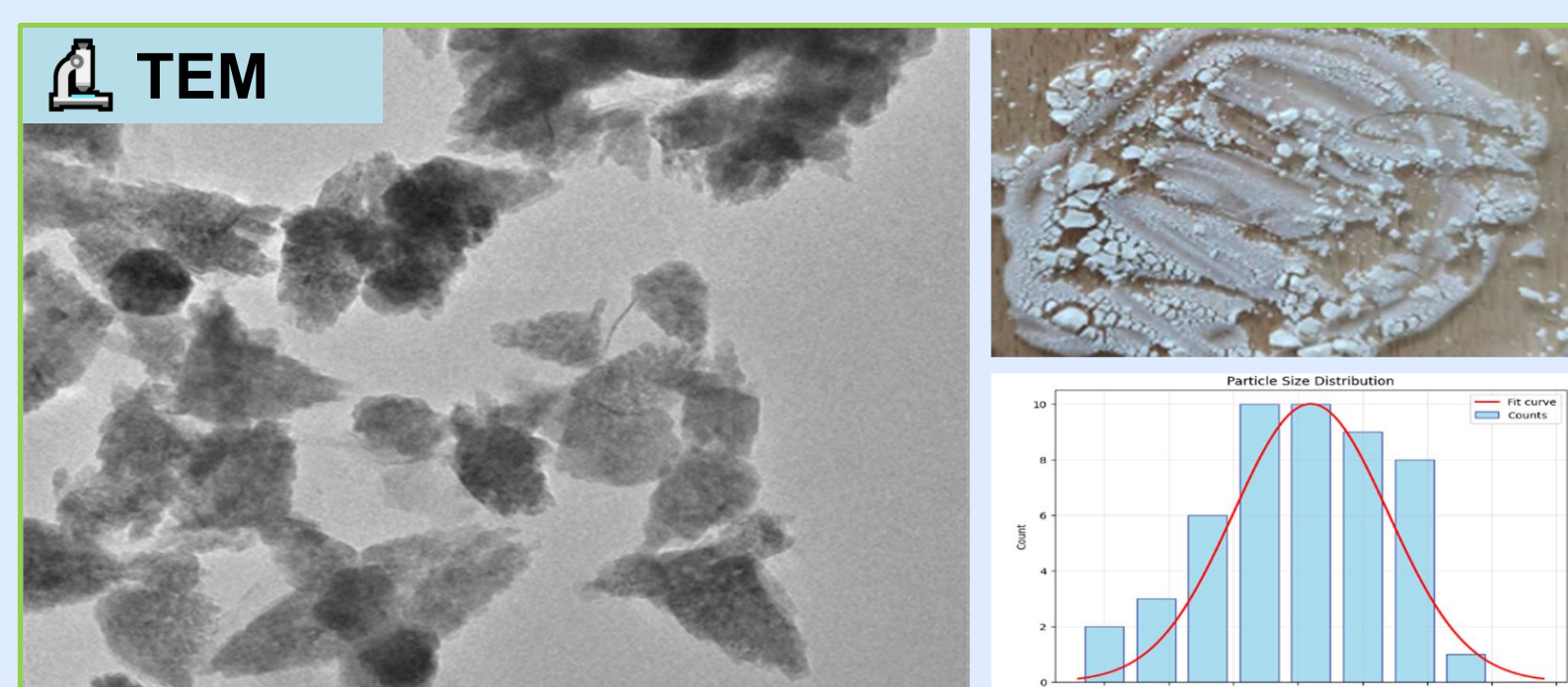
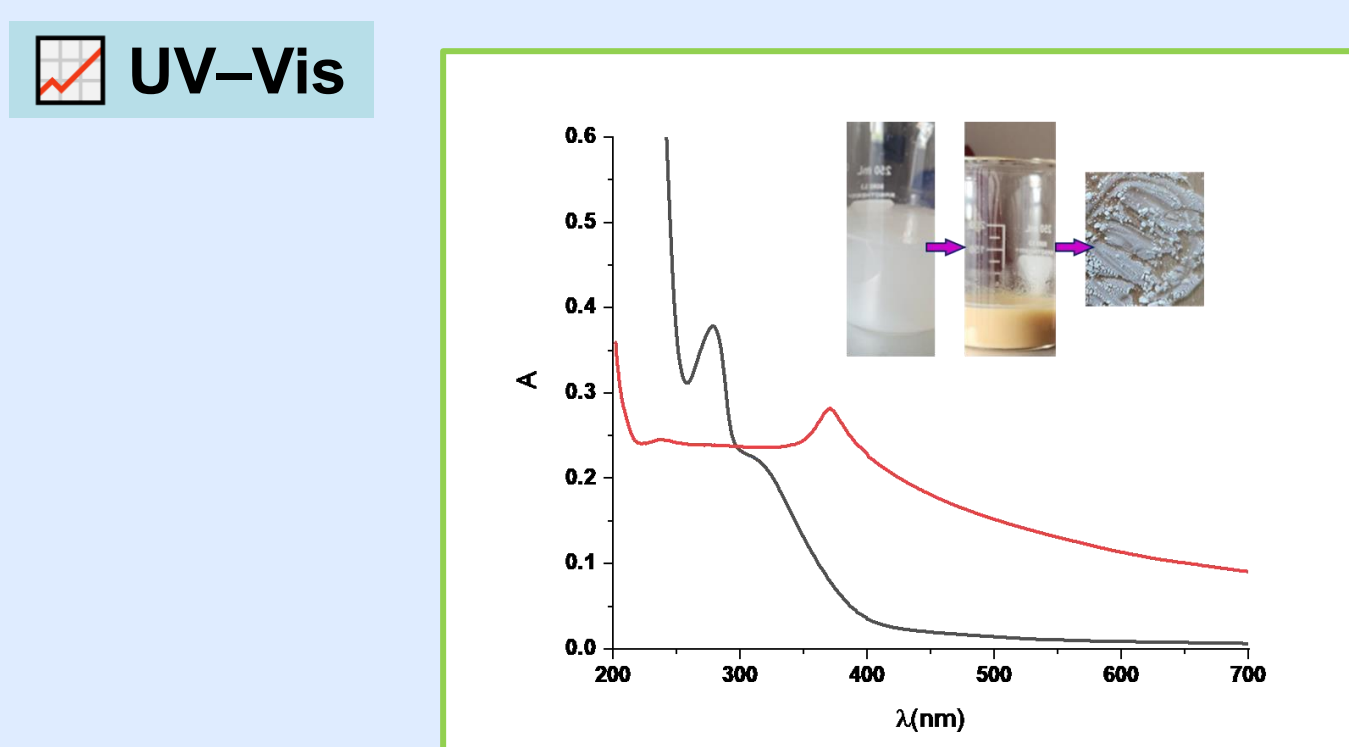
OPTIMIZATION PARAMETERS

- 🧪 Precursor concentration
- 🌿 Plant extract concentration
- 📏 pH
- 🌡️ Temperature
- 🕒 Reaction time
- ⚖️ Extract-to-precursor ratio

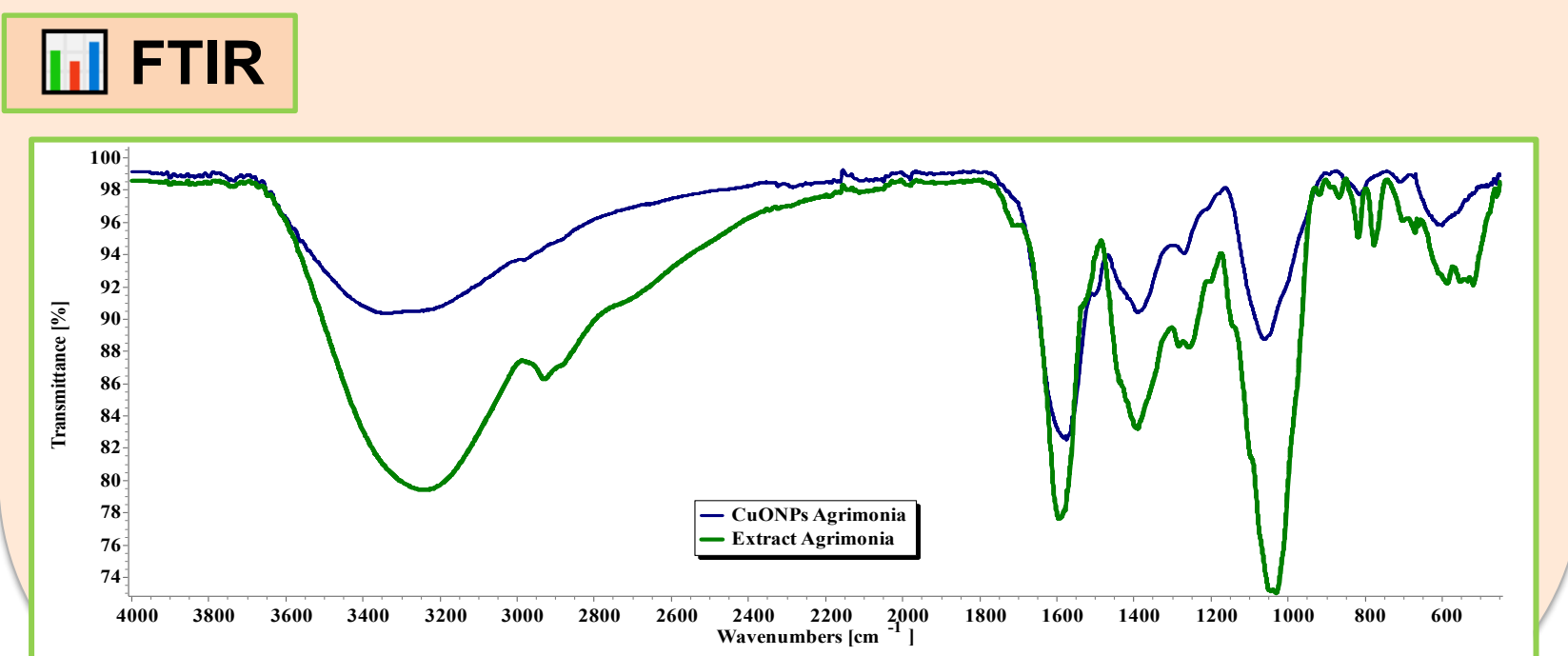
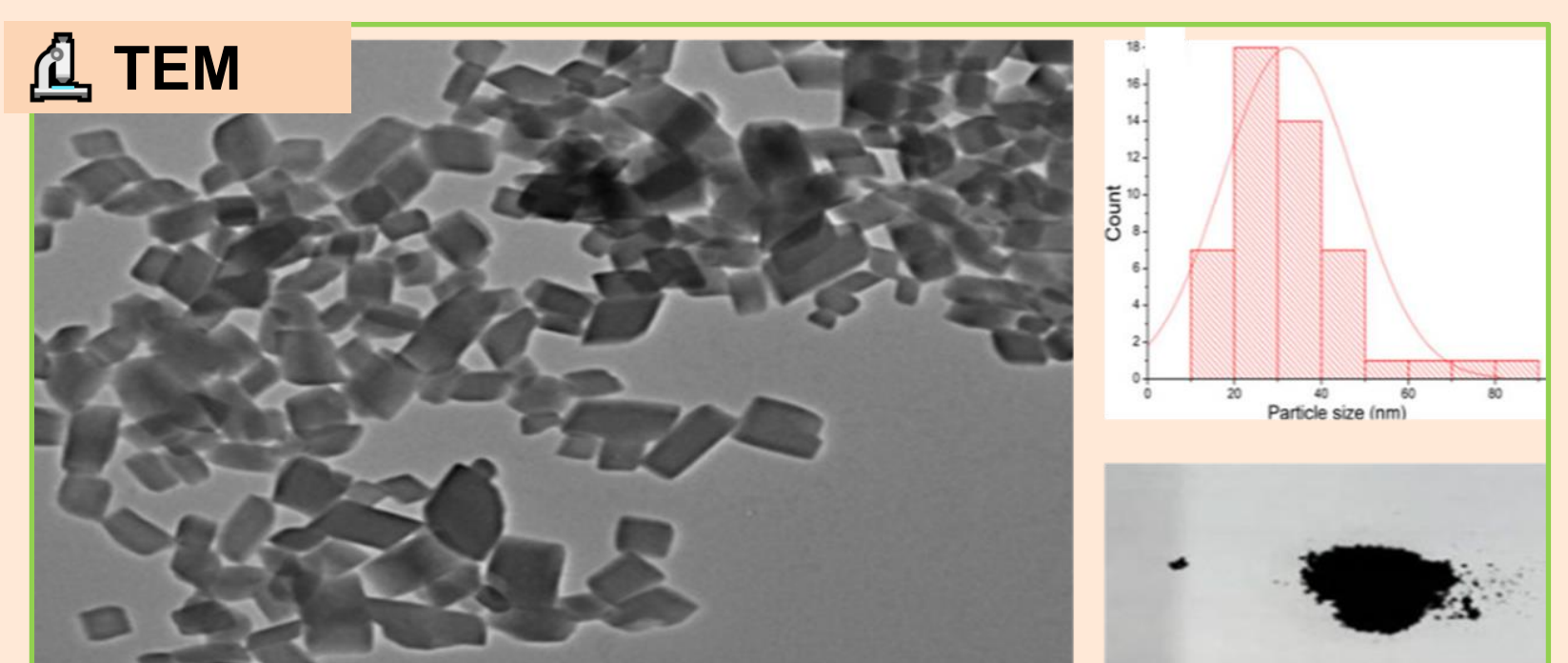
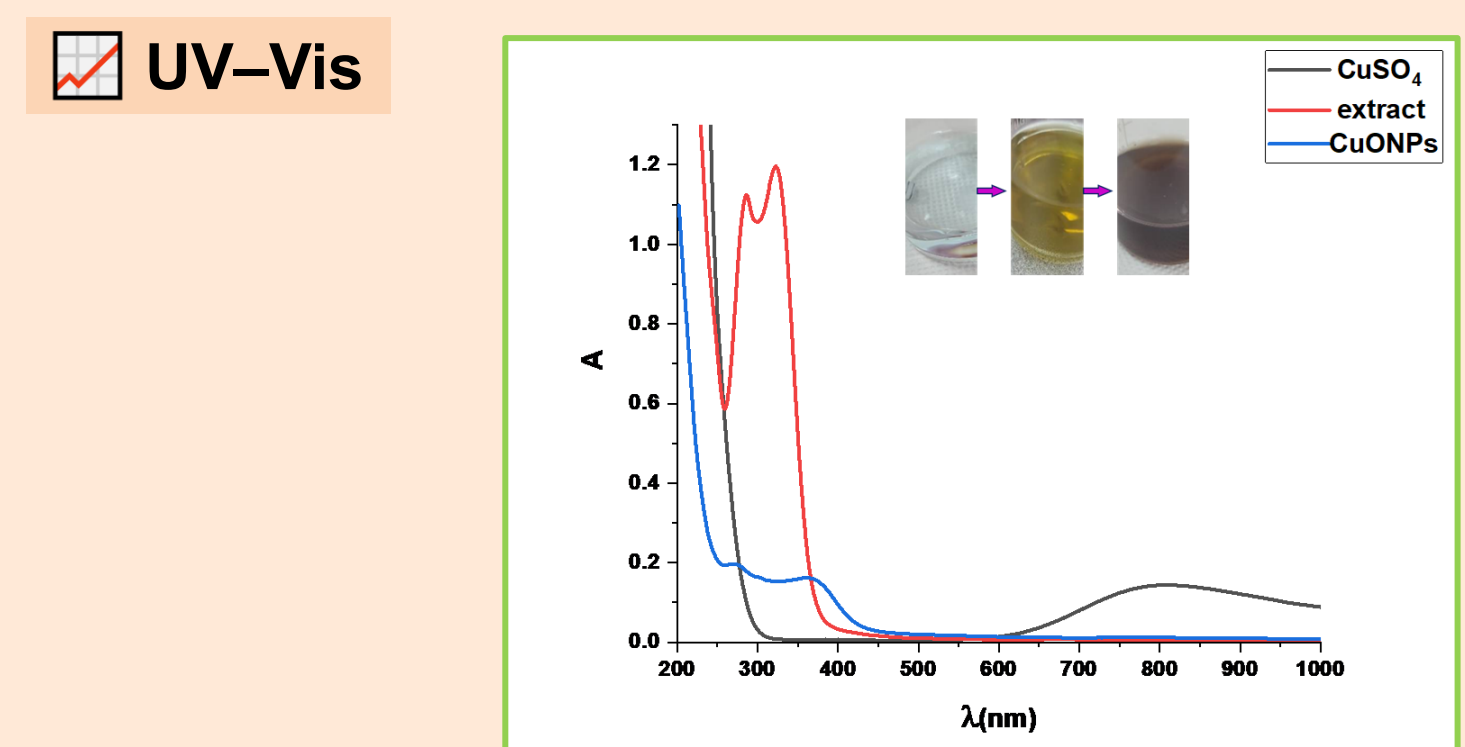
AgNPs



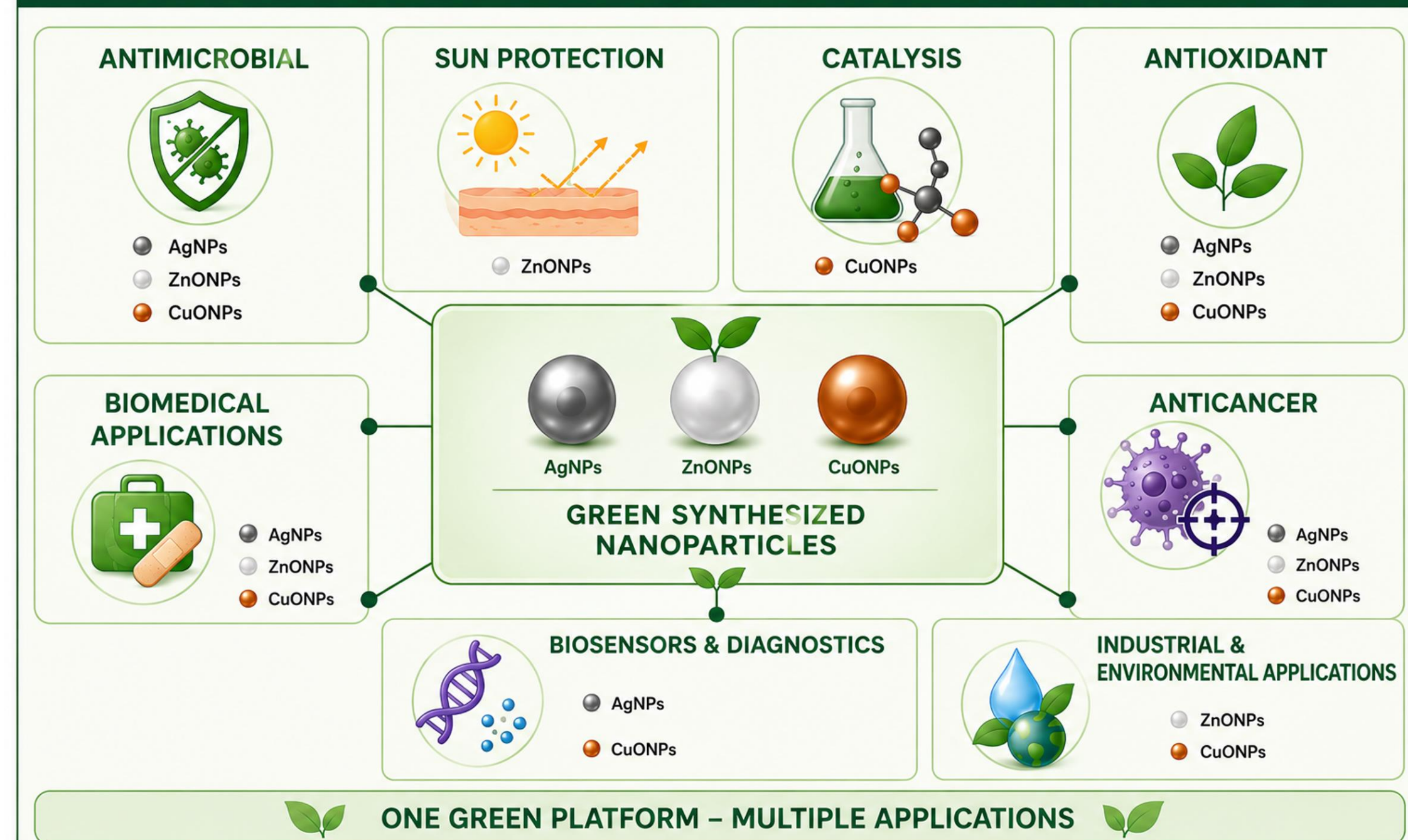
ZnONPs



CuONPs



APPLICATIONS OF NANOPARTICLES



ANTITUMOR ACTIVITY

Nanoparticles	Cancer cell line	Cancer type	IC ₅₀ (μg/mL) 24 h	IC ₅₀ (μg/mL) 72 h
AgNPs-H ₂ O	SW-480	Colorectal cancer	32.35 ± 1.25	17.34 ± 0.58
ZnO NPs	MDA-MB-231	Breast cancer	81.31 ± 2.51	58.67 ± 1.02
ZnO NPs	HCT-116	Colorectal cancer	71.82 ± 2.18	14.04 ± 0.54 ★ Best result (72 h)

References

- ✓ Marković K. et al. RSC Adv., 2024 (AgNPs)
- ✓ Kesić A. S. et al. Mater. Proc., 2023 (AgNPs)
- ✓ Muruzović M. et al. J. Food Drug Anal., 2016 (*Agrimonia eupatoria*)

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MAIN CONCLUSIONS

- ✓ Plant-mediated green synthesis enables the sustainable production of metal nanoparticles.
- ✓ The metal precursor governs nanoparticle formation and properties.
- ✓ AgNPs showed the fastest formation and highest colloidal stability.
- ✓ ZnONPs exhibited the strongest antitumor activity against HCT-116 cells after 72 h of exposure (IC₅₀ = 14.04 ± 0.54 μg/mL)