

Search for a Spanish Partner for a Bilateral R&D Project

Organization	
Date of Request:	24/9/2026
Company name:	National Research Centre (NRC) - Chemical Industries Institute.
Contact person and title/designation:	Dr. Hebat-Allah S. Tohamy
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SECTION 1: Entity launching the partner search

(Please give brief / to the point explanations. For more explanation on any point below, you may add a short paragraph as an annexure, with this document.)

Sector	Green Nanotechnology, Circular Bioeconomy, Advanced Materials, and Smart Packaging / Water Treatment.
Entity mission or core functions	Development of advanced multi-stimuli responsive optical and colorimetric sensors, smart freshness indicator platforms (such as the "Luna Luz" system) for real-time monitoring of food quality, environmental sensing devices, and functional nanomaterials for detection applications.
Date of establishment	1956
Ownership (if public and traded, add stock exchange and ticker symbol)	Governmental Research Center under the Ministry of Higher Education and Scientific Research of Egypt (Non-traded).
Total number of employees	~4,500+ researchers, scientists, and supporting technical and administrative personnel.
Number of employees in R&D	~3,500+ active researchers and scientific staff.
Key products sold or services provided	Development of advanced color-changing (halochromic) optical sensors, smart freshness indicator platforms (such as the "Luna Luz" system) that exhibit distinct, real-time visual color transitions for monitoring food quality,

	safety, and environmental changes.
Entity core technical competences	• Design and fabrication of advanced sensor platforms and halochromic smart indicators. • Integration of carbon nanomaterials and biopolymers into sensitive matrices for real-time detection of pH, gases, and spoilage markers. • Quantum chemical modeling (DFT/DOS calculations) to decode molecular sensing mechanisms and bandgap responses.
Key R&D programs and activities	• Serving as Principal Investigator and consortium coordinator for multi-national research initiatives (such as the PRIMA-funded SAPHIRA project) focused on advanced sustainable technologies and smart monitoring. • Development and validation of advanced multi-stimuli responsive optical, colorimetric, and smart sensor systems for real-time quality and safety monitoring. • Integration of functional nanomaterials and biopolymer composites into advanced sensing platforms, supported by computational modeling (DFT/DOS) and digital image colorimetry.
Examples of accomplishments	• Successfully coordinating and leading international multi-partner research consortia as a Principal Investigator under European frameworks (PRIMA / SAPHIRA project). • Engineering high-performance smart sensor prototypes and indicator platforms (such as the "Luna Luz" system) designed for real-time freshness and environmental tracking. • Securing prestigious national and international recognition (including the NRC Award for New and Smart Materials) for groundbreaking contributions to functional nanomaterials and sensor technologies.
Company strategic orientation	To partner with innovative European industrial leaders in sensor manufacturing, packaging, and smart electronics to co-develop, validate, and commercialize market-ready sensor technologies under international bilateral funding schemes.

SECTION 2: Spanish Company Profile

(Please provide a brief summary of the prospective partner company or organization. This summary may address some or all of the points below)

Profile of ideal technology partner	An innovative Spanish industrial company, SME, or technology-driven enterprise operating in the fields of sensor manufacturing, smart packaging, active material development, or environmental/water monitoring technologies, with a strong interest in commercializing advanced R&D solutions.
Core technological competencies and expertise	• Expertise in the industrial production, scale-up, and commercialization of optical, colorimetric, or electronic sensors. • Engineering of functional nanomaterials and biopolymer matrices that translate chemical stimuli (such as pH, spoilage gases, or analytes) into distinct, reliable visual color changes. • Strong market orientation and experience in product prototyping and quality validation.
Other essential qualifications (e.g.: ownership, track records etc.)	• Proven track record in participating in national or international R&D and innovation projects (e.g., European frameworks, bilateral initiatives). • Established distribution channels or commercial networks in the packaging, environmental, or sensor-based industrial sectors.
If you have a list of companies with whom you are in contact or interested in contacting, please provide contact details	Open to CDTI's recommendations and network matching for qualified Spanish industrial SMEs specializing in sensors, smart packaging, or advanced functional materials.
If you are interested in collaboration: please specify details and other important information you want to share with a potential company	We offer cutting-edge, lab-validated smart sensor technologies and functional nanomaterial systems (such as the "Luna Luz" platform) developed under rigorous international scientific standards, backed by our leadership in EU-funded projects (e.g., PRIMA/SAPHIRA). We are seeking a collaborative synergy to translate these

	innovations into robust commercial prototypes.
Interested areas of collaboration	• Co-development and industrial scale-up of smart sensors and active indicator systems. • Joint R&D validation, prototype testing, and commercialization under the STDF-CDTI bilateral funding framework.
Specific R&D contribution you are seeking/offering	• Offering (NRC / Research Side): Core technological design, advanced nanomaterial synthesis, sensor chemistry, formulation of color-changing (halochromic) / optical sensing matrices, computational modeling (DFT), and scientific validation. • Seeking (Spanish Industrial Partner): Industrial scale-up, engineering integration into commercial formats, market testing, and commercialization strategy for the joint products.

Hebat-Allah Sarhan

Signature

Name: Hebat-Allah Sarhan

Date: 24/9/2026

Proposed Project Summary & R&D Challenge

- **Project Title / Concept:** Smart Color-Changing (Halochromic) Sensor Systems for Real-Time Quality and Freshness Monitoring.
- **The R&D Challenge:** Conventional food packaging and quality monitoring methods lack real-time, non-destructive, and user-friendly indicators to track food spoilage or environmental changes accurately before consumption or industrial processing.
- **Proposed Solution & Objectives:**
 1. Developing advanced functional nanomaterials and biopolymer matrices embedded with color-changing (halochromic) optical sensors (i.e. Carbon dots recycled from agrowastes).
 2. Translating chemical and environmental shifts (such as pH changes, volatile spoilage gases, or specific analytes) into distinct, reliable visual color transitions that can be interpreted visually.
 3. Scaling up the sensor formulations for seamless integration into commercial packaging formats or industrial detection devices.
- **Expected Impact & Market Goal:** Delivering a low-cost, market-ready, smart-sensing platform that enhances consumer safety, reduces food waste, and provides a competitive commercial edge for industrial stakeholders in the packaging and sensor sectors.

Role of Egyptian Partner (NRC / Lead: Ass. Prof. Hebat-Allah):

- **Synthesis & extraction:** Upcycling local agricultural wastes (e.g., biomass residues such as onion peels, maize, etc.) into functional carbon dots and green optical nanostructures.
- **Biopolymer & matrix formulation:** Formulating and optimizing halochromic hydrogels, films, or coatings embedded with the smart optical sensors (After discussion with the company, we will see if it will be gels, films or coatings).
- **Lab-scale sensor validation:** Testing sensor sensitivity, response time, photostability, and colorimetric calibration (CIE $L^*a^*b^*$) against target spoilage analytes/pH shifts. In addition, fluorescent properties by fluorescent spectroscopy and chemical analysis for example FTIR, TEM or SEM.
- **DFT & molecular modeling:** Fundamental modeling of dye/nanomaterial host-guest interactions to optimize sensing mechanisms.

Expected Role of Spanish Industrial Partner (SME / Commercial Company):

- **Pilot/industrial scale-up:** Translating lab-scale sensor formulations into commercial packaging production lines (e.g., extrusion, film casting, flexographic printing, or coating onto active food trays/labels).
- **Industrial validation & prototyping:** Testing the integrated smart packaging under real-world cold chain, shelf-life, and storage conditions with target food products.
- **Regulatory compliance & market readiness:** Assessing food-contact safety compliance, scalability cost-efficiency, and commercial market integration in the EU/Spanish market.
- **Commercialization Strategy:** Leading the downstream market exploitation, IP strategy for industrial application, and end-user adoption.

R E S U M E

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Nationality: Egyptian



Executive profile & core expertise

Dr. Hebat-Allah Sarhan Tohamy is an Associate Research Professor at the National Research Centre (Cellulose and Paper Department), specializing in green nanotechnology, agro-waste valorization, and the development of intelligent biopolymer materials for active food packaging. With extensive international research experience across Europe and leadership roles in major international projects (such as the EU PRIMA "SAPHIRA" project), she successfully bridges advanced material science with practical, market-ready commercial applications, driving innovation from laboratory synthesis to working prototypes.

Professional experience & technical skills:

- ✓ **Core Expertise:** Green nanotechnology, valorization of agricultural biomass, synthesis of photoluminescent carbon quantum dots/nanomaterials, intelligent pH/thermo-responsive hydrogels, active biopolymer packaging, and sensor technologies.
- ✓ **Material Characterization:** Advanced command over XRD, TEM, SEM, FT-IR, TGA/DTA, DSC, Raman spectroscopy, UV-Vis, VSM, and fluorescence spectroscopy.
- ✓ **Computational & Software Skills:** DFT calculations, Molecular Docking, Gaussian program, ChemDraw, OriginPro, and Python-based analytical workflows.

Higher Education Qualifications:

- PhD in organic Chemistry, Faculty of Science, Helwan University, 2020. Title of the thesis: Preparation, characterization and applications of carbon allotropes derived from agricultural wastes.
- M. Sc. in organic Chemistry, Faculty of Science, Helwan University, 2017. Title of the thesis: Preparation, characterization and applications of cellulose based amphiphilic materials.
- B.Sc. in Chemistry and Biochemistry department, Faculty of Science, Helwan University, 2011, Very good with honor degree (Within the best 1st ten students).

Travelling

- Scientific missions in Czech Republic, Prague, 2019; 2022; 2023.
- Scientific mission in Italy, 2025.
- Scientific mission in Spain, 2025.

Other information:

1. Language skills: Good command of English TOEFL (AMIDEAST Testing Services; level 510) and SEPT (AUC testing; level A).
2. Computer skills: ICDL (The International Computer Driving License).
3. Great Dealing with Gaussian program, Chemdraw, Origin program, DFT Calculation and molecular docking.

Editor:

- Special Issue [**Fluorescent Aptasensors for the detection of in vivo homeostasis**] in [**Journal of Biological Regulators and Homeostatic Agents**]

Link: <https://aber.apacsci.com/si.php/index/detail?id=96&jid=89>

Scientific prizes:

- **Prof. Fardous Mohamed Abdel-Meguid Mubarak Award** for New and Smart Materials from the National Research Centre (NRC) for 2025. **Link:** <https://almessa.gomhuriaonline.com/732494/>
- The Journal of Renewable Materials (JRM), the **JRM Most Cited Paper Award 2025**. **Link:** <https://www.techscience.com/jrm/award/jrm-most-cited-paper-award-2025>
- MDPI the **Top 1000 Reviewers for 2025**. **Link:** <https://www.mdpi.com/about/announcements/17472>
- The **top 2% of the world's most-cited scientists**. **Link:** <https://topresearcherslist.com/Home/Profile/1206741>
- Prof. Yahia Abdullattif prize from the Academy of Scientific Research and Technology (2025). **Link:** http://www.asrt.sci.eg/all-news-ar/award-prizes/?lang=ar&fbclid=IwY2xjawMbIgRleHRuA2FlbQIxMABicmlkETFaem5hczlPNXI6OFg3bzI5AR5LayaTRGtX9dAm-MCNymETcLtwbG0DSAtjNGMu2NHU6ju7JqXb7XhRteBj8w_aem_vf1VlSs2aH9nQRfgThTq4g
- Dr. Wafaa Esmael Abdelfattah Prize in Nanotechnology and its Applications by the National Research Centre (2025).
- **The best M.Sc. thesis in the National Research Centre (2017).**
- **"Outstanding Awards for Excellence in Manuscript Reviews" of Water 2024 Outstanding Reviewer Award.**

Link: <https://www.mdpi.com/about/announcements/10913>

Reviewing:

1. **"Outstanding Awards for Excellence in Manuscript Reviews" of Water 2024 Outstanding Reviewer Award.**

Link: <https://www.mdpi.com/about/announcements/10913>

2. **The 10th International Conference on Agricultural and Biological Sciences (ABS 2024).**

Link: <http://www.academicconf.com/reviewerlist?confname=abs2024>

Designing

Cover story for the Journal of Renewable Materials, volume 12, no. 12, 2024.

Link: <https://www.techscience.com/jrm/v12n12>

Memberships:

- The Egyptian Society of Polymer Science and Technology.
- The Organization for Women in Science for the Developing World (OWSD).

TV shows:

- Minia Radio. 2025.
- Egyptian TV, Channel 2 in the TV program show "Hadath fi Misr" to discuss innovative solutions for transforming agricultural waste into valuable resources like cellulose and carbon materials. 2024.

Link: <https://www.youtube.com/watch?v=co8Sr-Liaos>

Webinars:

1. The 1st International Online Conference on Separations, Separations Journal (MDPI). 2025. **Link:** <https://sciforum.net/event/IOCS2025?subscribe>
2. 15th Nanomaterials MDPI Webinar entitled "Nanomaterials Application: New Trends and Insights", *Speaker*, 2024. **Links:** <https://www.mdpi.com/journal/nanomaterials/events/17101> **Video:** https://www.youtube.com/watch?v=H_MlDs9JfNw&t=2s
3. Sensor 100 "Food Chain Sensing Technology". *Speaker*, 2024. **Links:** https://www.sensor100.com/SFA2024/About_SFA24.html

4. Webinar on the Global Summit on Artificial Intelligence (GSAI2024)," scheduled on April 22-23, 2024, belongs to HSPI open access publisher (<https://www.hspioa.org/>)", **Speaker**, 2024.
Event: <https://artificial-intelligence.hspioa.org/previous/GSAI-S1/speakers/hebat-allah-tohamy>

Conferences:

1. **ISPEC 17th INTERNATIONAL CONFERENCE ON AGRICULTURE, ANIMAL SCIENCE & RURAL DEVELOPMENT**, April 25-27, 2025, Kırşehir, Türkiye, **Speaker**.
2. Virtual International Scientific Conference on "Applications of Chemistry in Nanosciences and Biomaterials Engineering" NanoBioMat 2024 – Winter Edition, **Speaker**.
3. ICWRR2024 Internal Conference on Wider Uptake of Water Resource Recovery from Wastewater Treatment. 2024. **Paper**.
4. The 10th International Aegean Congress on Natural & Medical Sciences held online and in person On October 5-7, 2024/ Izmir, Turkey, **Speaker**.
5. Youth Sustainable Development Conference (YSDC) 2024 from the 3rd to the 4th of July 2024 in Rabat, Morocco, **Attendance**.
6. The 19th International conference of Arab Chemical Union (ICACU) entitled "Horizon of Applied Sciences for Quality of Life and Sustainability", **Speaker**, 2024.
7. The First International Scientific Conference on Applied Sciences and Advanced Technology, **Speaker**, 2024.
8. The 6th Chemical Industrial Institute Conference (CIRIC-6) under the name of "Chemistry: Research Perspectives and Industrial Progress", **Organizer**, 2023.
9. The 2nd international conference of the society for women in science in developing countries - Egypt (OWSD organization), **Speaker**, 2023.
10. The Egyptian fifth international conference in chemistry: Chemistry and Global Challenges (EICC), Held in Marsa Alam Resort, **Speaker**, 2022.
11. Badr University conference of pharmaceutical sciences, online, **Speaker**, 2021.
12. Diabetes Guts and Liver, National Training Institute, **Attendance**, 2019.

List of projects:

1. **PI** of PRIMA International Project "Sustainable Antimicrobial Packaging based on a Healthy Intelligent Renewable Approach", Acronym "SAPHIRA", EU project, 2024-2027.
2. **PI** of Project "Agri-food by-products derived cellulose films for food package naked-eye sensing and preservation", Egypt – Italy Cooperation, 2025 - 2027.
3. **PI** of "Stimuli-responsive smart materials from agricultural wastes". Egypt – Czech Cooperation, 2022 - 2024.
4. **Co-PI** of "Preparation of amphiphilic carbon based allotropic polymers from agrowastes recycling for water treatment and drug delivery". Academy of Scientific Research and Technology & Science and Technology Center (STC). National Strategy for Genetic Engineering and Biotechnology, Phase iii: Applications & Products Development, 2023–2024.
5. **Member** of STDF project No 45892, "Efficiently Utilizing Agricultural Residues to Produce Renewable Biofuels and Adsorbents for Wastewater Treatment", 2021 – 2023.
6. **Member** of "Self-healing hydrogels based on cellulose". Egypt – France Cooperation, Imhotep Program, 2021 - 2023.
7. **Member** of "تعظيم الاستفادة من المخلفات الزراعية". National Research Centre, 2022-2024.
8. **Member** of "Development of new cellulosic derivatives and their application in medical fields". Egypt – Hungarian Cooperation, 2020 - 2022.

9. **Member** of “Biomass-derived carbon allotropes for environmental/ bio-imaging drug delivery applications”. Egypt – France Cooperation, Imhotep Program, Egypt – France, 2019 - 2021.
10. **Member** of “Carbon-doped silica from rice husk”. National Research Centre, 2019-2021.
11. **Member** of “Upgrade of Graphene Oxide/ Cellulose Hydrogels Composites for Water Treatment”. Egypt – Czech, 2019 – 2021.

List of Publications:

1. **Hebat-Allah S. Tohamy**, & Cacciotti, I. (2026). Amphiphilic Emulgels Loaded with Pomegranate Carbon Dots and Rosemary Oil for Metabolic pH Monitoring. Gels.
2. **Hebat-Allah S. Tohamy**, Chapter Seven - Starch-based smart packaging added with nanomaterials, Editor(s): Swarup Roy, Pratap Kalita, Sneha Punia Bangar, In Applications of Starches in Food and Packaging, Starches in Smart Packaging, Academic Press, 2026, Pages 227-263, ISBN 9780443453960, <https://doi.org/10.1016/B978-0-443-45396-0.00013-X>. (<https://www.sciencedirect.com/science/article/pii/B978044345396000013X>)
3. El-Sabour, El-S., El-sakhawy, M, **Hebat-Allah S. Tohamy** Nano-Silica Synthesis from Rice Husk Waste and Its Use as a Paper Sheet Anti-Aging Coating with Density Functional Theory (DFT) Insights, Journal of Renewable Materials <https://doi.org/10.32604/jrm.2026.02026-0030>
4. **Tohamy, H. A. S.** Hibiscus derived nitrogen doped carbon nanochains for visual pH sensing and catalytic methyl orange degradation. Sci Rep 16, 23657 (2026). <https://doi.org/10.1038/s41598-026-59561-0>
5. **Tohamy, H. A. S.**; Pomegranate-derived phosphorus, nitrogen-doped carbon nanoflower/nanofiber hybrids and quasi-spherical dot stabilized Pickering emulsions with low-DS amphiphilic CMC for dual-mode detection of pathogenic bacteria and their metabolic pH signatures. *RSC Adv.* 2026; <https://doi.org/10.1039/d6ra02135b>
6. El-Sabour, M. A., Tohamy, H. A. S., & El-Sakhawy, M. (2026). Synthesis, performance, and DFT insights of sustainable waste-derived S/N-doped alumina as an antiaging coating for paper sheets. *Scientific Reports*, 16(1), 23354.
7. **Tohamy, H. A. S.** (2026). Garlic carbon dot doped amphiphilic whey protein alginate nanoemulsion sensor for intelligent apple preservation. *Discover Materials*, 6(1), 234.
8. **Tohamy, H. A. S.**, Kamel, S., & El-Sakhawy, M. (2026). Preparation of poly diallyldimethylammonium chloride/biochar hydrogels for Cr (VI) adsorption from water. *Chemical Papers*, 1-9.
9. Sellami, M., **Tohamy, H. A. S.**, Burduhos-Nergiş, D. D., Vizureanu, P., Sandu, A. V., & Toumi, M. (2026). GH/GOs/rGO reinforced alkaline and acid-activated geopolymers: a comparative study of microstructural and optical properties. *Frontiers in Built Environment*, 12, 1851243.
10. **Tohamy, H. A. S.** (2026). Fluorescent sensors based on cellulose/carbon quantum dots. *Discover Materials*, 6(1), 165.
11. El-Khordagui, L. K., El-Habashy, S. E., Simchi, A., **Tohamy, H. A. S.**, Focarete, M. L., Rea, M., ... & Dodda, J. M. (2026). Next-generation epidermal patches: Bridging 3D and multidimensional printing for biomedical and personal care innovations. *Bioactive Materials*, 63, 239-283.
12. **Tohamy, H. A. S.** Novel dialdehyde fullerene-like carbon nanostructures from red garlic peels for naked-eye cyclohexane gas sensing and pH. *Discover Nano* 21, 162 (2026). <https://doi.org/10.1186/s11671-026-04581-y>
13. **Tohamy, H. A. S.** (2026). Novel pH-induced dialdehyde alginate polymer dots as a quantitative nanoemulgel polyelectrolyte for real-time microbial detection. *Discover Applied Sciences*, 8(5), 520.

14. **Tohamy, H. A. S.** (2026). Aggregation-induced emission garlic peel carbon dots infused-carrageenan/whey protein emulsion for apple spoilage biosensing. *Journal of Food Measurement and Characterization*, 1-15.
15. Kandil, H., **Tohamy, H. A. S.**, & El Nashar, D. E. (2026). Biomass-derived carboxymethyl cellulose for enhanced performance of natural rubber/carbon black composites. *Polymer Bulletin*, 83(7), 355.
16. **Tohamy, H. A. S.**, & El Desouky, F. G. (2026). Enhancing optical, luminescence, and dielectric properties of thermoplastic polyurethane with Mn₃O₄/carbon quantum dots for multifunctional applications. *Emergent Materials*, 9(4), 77.
17. El-Gendy, D. M., **Tohamy, H. A. S.**, & El Sawy, E. N. (2026). Upcycling sawdust into sustainable binder-free nitrogen-doped carbon nanofiber electrodes for high energy density supercapacitors. *RSC advances*, 16(18), 15979-15991.
18. **Tohamy, H. A. S.** (2026). Novel hollow carbon dots from cactus cladodes Peel as a qualitative 'turn-on' fluorescence and naked-eye detection of the flammable cyclohexane gas sensor. *Discover Materials*.
19. **Tohamy, H. A. S.**, El-Sakhawy, M., & Elwan, A. M. (2026). In situ synthesis of aluminum/copper-doped carbon dots from magnetite graphene oxide-carboxymethyl cellulose-2-acrylamido-2-methyl-1-propanesulfonic acid hydrogel and their electrical characterization. *RSC advances*, 16(1), 261-274.
20. **Tohamy, H. A. S.** (2026). Novel Garlic Carbon Dot-Incorporated Starch Whey Protein Emulsion Gel for Apple Spoilage Sensing. *Gels*, 12(1), 47.
21. **Tohamy, H. A. S.**, Kandil, H., Ward, A. A., & El Nashar, D. E. (2025). Microwave assisted magnetite carbon dots for enhanced the thermal aging resistance, magnetic and dielectric properties of acrylonitrile butadiene rubber composites. *Journal of Thermoplastic Composite Materials*, 08927057261422192.
22. **Hebat-Allah S. Tohamy** (2025). Novel onion derived sulfur nitrogen carbon quantum dots/cellulose sulfate naked-eye pH-sensitive sensor for chromium, bacterial and fungal detection in green beans” for publication in “*Journal of Food Measurement and Characterization*”.
23. **Hebat-Allah S. Tohamy**, Kamel, S. El-Sakhawy M. and Abozeid, M. (2025). Controlled Release of 4-Aminoacetophenone by Janus Amphiphilic Graphene Oxide Initiates Antitumor Activity and Apoptotic Breast Cancer Cell Death in Vitro for publication in “*Journal of BioNanoScience*”.
24. El-Attar, R. O., **Hebat-Allah S. Tohamy**, & Habib, I. H. (2025). Cyclic Voltammetric Analysis of Molnupiravir Using Microwave-Synthesized Copper (II) Oxide/Reduced Graphene Oxide Composite. *Arabian Journal for Science and Engineering*, 1-13.
25. **Hebat-Allah S. Tohamy** (2025). A two-in-one lignosulfonate carbon dots for bacterial detection and fluorescence quenching in food, pharmaceuticals, and cultural heritage preservation. *Scientific Reports*.
26. **Hebat-Allah S. Tohamy**, El-Sakhawy, M., Abd Al-Daim, S., & El Taweel, A. N. (2025). Antiviral potential of sugarcane bagasse-derived carbon quantum dots against SARS-CoV-2, and herpes simplex virus-1. *Discover Applied Sciences*.
27. AbdelMohsen, M. M., **Hebat-Allah S. Tohamy**, Abdel-Halim, S. A., Awad, H. M., & El-Sakhawy, M. (2025). Sustainable and eco-friendly packaging films based on poly vinyl alcohol incorporated with Chrysanthemum frutescens extract. *Natural Product Research*, 1-5.
28. **Hebat-Allah S. Tohamy**. (2025). Amylopectin xerogel with onion based sulfur nitrogen doped carbon quantum dots as a chemosensor for chromium and biosensor for microbial spoilage in tomatoes. *Sci Rep* 15, 32667. <https://doi.org/10.1038/s41598-025-19875-x>
29. **Hebat-Allah S. Tohamy**. (2025). Beet root carbon dots cellulose sulfate film as a novel naked eye pH sensor for chromium and bacterial detection in tomatoes. *Sci Rep* 15, 30235. <https://doi.org/10.1038/s41598-025-15663-9>
30. **Hebat-Allah S. Tohamy**. (2025). A Novel Natural Chromogenic Visual and Luminescent Sensor Platform for Multi-Target Analysis in Strawberries and Shape Memory Applications. *Foods*. 14(16):2791. <https://doi.org/10.3390/foods14162791>

31. **Hebat-Allah S. Tohamy**, Koriem, A. & El-Nashar, D.E. (2025). Eco-friendly EPDM nanocomposites reinforced with sugarcane bagasse-derived cellulose nanocrystals. *BMC Chemistry* 19, 239. <https://doi.org/10.1186/s13065-025-01601-3>
32. **Hebat-Allah S. Tohamy**. (2025). A novel anthocyanins hydroxyethyl cellulose film for intelligent chicken meat packaging with mechanical study, DFT calculations and molecular docking study. *Scientific Reports*, 15(1), 27311.
33. Elsayed, H., **Hebat-Allah S. Tohamy**., El-Sakhawy, M., El-Khateeb, M. A., & Nashy, E. S. H. (2025). Revolutionary approach to risk assessment utilization of oxidized agricultural waste as inexpensive adsorbents in tannery effluent: a kinetic investigation. *Environmental Monitoring and Assessment*, 197(8), 894.
34. Sharmoukh, W., & **Hebat-Allah S. Tohamy** (2025). The Dielectric Properties of Conducting Films Derived from Sugarcane Bagasse: Implications for Cyanoethyl Cellulose/cellulose Acetate Synthesis. *Waste and Biomass Valorization*, 1-12.
35. Haggag, E. S. A., **Hebat-Allah S. Tohamy**, Mahmoud, A. E. D., El-Sakhawy, M., & Salem, A. R. (2025). Acrylamide/ethyl cellulose Schiff base hydrogel for uranium capture from aqueous solutions using response surface methodology. *International Journal of Biological Macromolecules*, 145666.
36. **Hebat-Allah S. Tohamy**. (2025). Quantum dots as an emerging nanocarrier for drug delivery. *Quantum Dot Nanocarriers for Drug Delivery*, 363-384.
37. **Hebat-Allah S. Tohamy**. (2025). Artistic anti-counterfeiting with a pH-responsive fluorescent ink using DFT and molecular electrostatic potential mapping insights. *Scientific Reports*, 15(1), 1-15.
38. El-Nasharty, M., El-Sakhawy, M. & **Hebat-Allah S. Tohamy**. Temperature responsive aluminum manganese doped carbon dot sensors for enhanced electrical conductivity with DFT calculations. *Sci Rep* 15, 19754 (2025). <https://doi.org/10.1038/s41598-025-04531-1>.
39. AbdelMohsen, M. M., **Hebat-Allah S. Tohamy**, El-Masry, H. M., Abd-Allah, W. E., & El-Sakhawy, M. (2025). Antimicrobial testing of cyanoethyl cellulose membranes incorporated with Schinus molle (L.) leaf extract. *Polymer Bulletin*, 1-15.
40. **Hebat-Allah S. Tohamy**. (2025). Microwaved schiff base dialdehyde cellulose-chitosan hydrogels for sustained drug release with DFT calculations. *BMC chemistry*, 19(1), 114.
41. Mohamed, F.EZ.S., **Hebat-Allah S. Tohamy**, El-Sakhawy, M. Hepatoprotective activity of bio-fabricated carbon quantum dots-decorated zinc oxide against carbon tetrachloride-induced liver injury in male rats. *BMC Pharmacol Toxicol* 26, 94 (2025). <https://doi.org/10.1186/s40360-025-00924-0>.
42. **Hebat-Allah S. Tohamy** (2025). Fullerene-Functionalized Cellulosic Hydrogel Biosensor with Bacterial Turn-on Fluorescence Response Derived from Carboxymethyl Cellulose for Intelligent Food Packaging with DFT Calculations and Molecular Docking. *Gels*, 11(5), 329.
43. **Hebat-Allah S. Tohamy** (2025). Novel intelligent naked-eye food packaging pH-sensitive and fluorescent sulfur, nitrogen-carbon dots biosensors for tomato spoilage detection including DFT and molecular docking characterization. *International Journal of Biological Macromolecules*, 143330.
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