المجموعات البحثية الخاصة بقسم الكيمياء

السنة	أعضاء المجموعة البحثية	موضوع البحث	عنوان المجموعة	
2019	Prof. Dr Hassan Hasan Hammoud (PI) Dr Essam Mohamed Adly Bakir Dr Hassan Mohamed Traboulsi Mr Ranjith Kumar Karnati Dr Aly Mohamed Hafez Dr Ali Hussein Trabolsi Dr Syed Ghazanfar Ahmad	Preparation and characterization of different hybrid cobalt graphitic carbon nanostructures (CoCNS) by thermal decomposition of specific cobalt coordination complexes. Also, the catalytic and electrocatalytic activities of CoCNS in reduction and oxidation reactions will be investigated.	Novel Cobalt Graphitic Carbon Nanostructures for Catalytic Hydrogenation and Oxidation Reactions **مواد جديدة من كوبالت نانوكربون الغرافيتية لتفاعلات الأكسدة و الهدرجة التحفيزية**	**RG1**
2019	Dr Mohamed Gouda Mahmoud (PI) Prof Mohammed Abdullah Al-Omair Dr Waleed Elsayd Abdelmaksoud	Organometallic compounds based on ferrocene and related derivatives are considered to be an important category due to its diverse applications including catalysis and medical applications. Cyclopentadienyl-Fe- arene (CpFeA) and possible derivatives will be synthesized using microwave technique and/or ligand exchange. The synthesized compounds will be characterized by 1H-NMR, mass spectra, UV-visible spectroscopy and FTIR. Furthermore, density functional theory (DFT) design will be performed to interpret X-ray diffraction. Polymerization of synthesized CpFeA compound (or its derivatives) will be synthesized by different techniques. The biological activity of synthesized CpFeA will be evaluated. Moreover, the impacts of the different electrochemical characteristics on the electrocatalytic oxidation of an important fuel such as formic acid oxidation will be studied on platinum electrode modified with the CpFeA and CpFeAP. The modified electrodes will be studied by electrochemical, surface characterization and structural	Synthesis of Cyclopentadienyl Metal Aromatic Polymers: Biological and Electrocatalysis Applications	**RG2**

		techniques to analyze the materials and the system performance.		
2017	Prof. Ahmed Alnajjar Prof. Abdullah Ahmed Dr.Ammar Ebrahim Dr. Rafea Elgorashe Dr. Abubakr Idris Dr. Victor Cerda	In this project, we are running to develop new methods for food analysis using sequential injection chromatography. Mainly we are focusing on optimization of instrument condition, optimization of mobile phase composition, validation of method and application of these methods in real food sample.	Developing new efficient sequential injection chromatography analytical procedures of mass food products in Saudi markets for safety and health purposes	**RG3**
2017	Dr. Hany Abd El-Lateef (PI) Dr. Mahmoud Saleh (Co-PI) Dr. Mohamed Al-Omier (Co-PI) Dr. Ahmed Touny (Co-PI) Dr. Mai M. Khalaf (Co-PI)	In this project, we are developing methodology needed for the synthesis, processing, and characterization of novel nanomaterials for water treatment applications. This new system can be applied practically in the commercial scale, especially in the production of filters of highly purified water.	Nanotechnology for water treatment: Design and fabrication of new nanocomposites for removal of toxic materials from waste streams	**RG4**
2017	Dr. Moahmed Al-Omier (PI) Dr. Hany Abd El-Lateef (Co-PI) Dr. Mahmoud Saleh (Co-PI) Dr. Mohamed Shaker (Co-PI) Dr. Abd El-Wahed Rashad (Co-PI)	The project focuses on the measurement of structural and physical properties enabling performance measurements of nano-solar cell devices, and determining and disseminating key data related to nano-wire processing, structure, properties, and device performance efficiency.	Nanotechnology for solar energy conversion: Photoelectrochemical splitting of water using polymer-modified photoelectrodes	**RG5**
2019	Dr. Hany Abd El-Lateef (PI) Prof. Dr. Ahmed O. Alnajjar (CO-PI) Prof. Dr. Moahmed Al-Omier (CO-PI) Dr. Mai M. Khalaf (Co-PI) Dr. Mohamed Shaker (Co-PI)	In this project, different nanostructured composite were used to apply various layers on steel pipelines using cold spraying and dip coating techniques to achieve three types of coating. This will help in design of efficient coatings layers for protection .of steel from corrosion	Novel Nanostructured Composite Sol-gel Ceramics: Design, assessment and application as coating layers for corrosion protection of steel pipelines	**RG6**
2019	Dr Hany Elsawy (PI) Dr. Manal Alfwaires Dr. Abdullah Mossa Alzahrani Dr. Ashraf Abdel-Moneim	The significance of the damage in biological systems by excessive generation of reactive oxygen species cannot be overestimated, as they have been associated with pathological conditions. In this research group, we will elucidate recent progress in cellular and molecular targets of oxidative stress and the antioxidant or	Effective therapeutic approaches for pathological disorders	**RG7**

		pharmaceutical intervention strategies to treat ROS-related harmful effects. Topics will include oxidative stress biomarkers, cellular and molecular mechanisms of oxidative stress, oxidative stress-induced pathogenesis, oxidative stress and tumors, oxidative stress and diabetes, oxidative stress and degenerative diseases, role of antioxidants to modulate ROS, and phytochemicals targeting oxidative stress.		