HASLINA AHMAD

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EXPERTISE

Bioinorganic Synthesis, Material Chemistry, DNA binding, Drug Design and Drug Delivery

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Dr. Haslina Ahmad's research focuses on the synthesis of novel photochemically and/or electrochemically active metal centres to produce functional molecular architectures, such as potential anticancer drugs, biosensors, anion sensors etc. Her major research areas include studies on luminescent coordination complexes that interact with biomolecules such as DNA. Most of her research output appears in top chemistry journals such as Chemical Communication, Chemistry—A European Journal, Scientific Reports etc.

CURRENT RESEARCH INTERESTS:

Development of nanomaterials for drug delivery

Cancer has been the world's greatest concern as it leads the chart as the major cause of death worldwide. A critical obstacle and challenge for cancer therapy concerns the limited availability of effective biocompatible delivery systems for most hydrophobic therapeutic anticancer drugs. It is particularly important to improve the aqueous solubility of drugs, as low drug solubility in aqueous media hampers the ability of drugs to be administered through the intravenous route. Since many important anticancer agents have poor water solubility, the development of novel delivery systems for these molecules without the use of organic solvents has received significant attention. Nanoparticles offer great potential and a promising approach to deliver therapeutic agents into targeted organs or cells and they have been actively developed for application in cancer therapy. This work involves the development of novel nanomaterials as drug delivery anticancer agents.

Biophysical and Biochemical Characterization of the DNA Interactions of Cytotoxic Ruthenium(II)-Intercalating Agents

Apart from development of nanomaterials for drug delivery, our group also works on biophysical and biochemical characterization of DNA binding agents. Chemotherapy with Pt complexes is one of the main pillars in the treatment of cancer today. However, their use is limited by the high toxicity and some tumors are resistant towards the drug. For these reasons, the need for an alternative anticancer drug has been initiated. The ruthenium-based complexes have been proposed to possess potential antitumor activity and antimetastatic behaviour, showing lower systemic toxicity than platinum compounds. This work involves the synthesis of novel metal complexes, particularly ruthenium(II) complexes that have potential as new anticancer drugs with minimal side effects but higher efficiency.

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LINK TO POSTGRADUATE FIELD OF STUDY:

Inorganic chemistry, Medicinal chemistry, Materials science

ADDITIONAL INFORMATION: