

Research Outcomes of SAIF-SPIHER

SAIF-SPIHER, a sophisticated instrumentation facility is a dedicated laboratory to learn the property of any advanced material with the molecular spectroscopic aid. Although, SAIF-SPIHER has vested its interest in exploring smart nano materials, diagnosing diseases in early stages through skin, hair, blood & nails, monitoring the standard of the available commodities and finding the applications of the discovered materials. SAIF-SPIHER strongly believes in upgrading the society through research and has made no compromise with the useless data oriented research.

With the available facilities of SAIF-SPIHER, research scholars of SAIF have published more than 158 research papers in reputed, high impact factor international journals and have earned cumulative impact factor as 203. So far, 5 Ph.D. scholars from SAIF-SPIHER have successfully completed their research programme. Based on the innovative research work undertaken by the scholars, three patents have been filed.

Patents Filed

- *Cellulose Nanofibrils made Water Purifier to remove Uranium Pollutants from Groundwater*
- *Identification of Active Component Responsible for Anti-Thyroid from the Seeds of Commiphora Mukul*
- *Efficacy of 1,1 Dimethylbigunaide Hydrochloride (Dmbh) Over Diabetes Using Human Single Hair Fibre*

SAIF-SPIHER serves better to benefit the society through applicable findings in the following ways.

- SAIF-SPIHER takes a pride in finding a cost effective water purifier, made up of Cellulose Nano Fibrils (CNFs), extracted at SAIF-SPIHER, to remove the radioactive pollutants in the ground water. The purifying ability of the fibrils was determined using PL spectroscopic technique at SAIF-SPIHER.
- The standard of CNFs obtained from wood and non-wood plant precursor resources is understood with spectral impressions exhibited at FTIR-ATR and Fourth derivative FTIR-ATR spectroscopic techniques. SAIF-SPIHER has made a great achievement in differentiating the cellulose obtained from wood and non-wood plant fibers using FTIR-ATR technique.
- Photo-thermally durable papers were made using CNFs at SAIF-SPIHER and the stability of the fibers was learnt by deploying FTIR-ATR and UV-Vis DRS/DTS spectroscopic techniques.

- Another milestone by SAIF-SPIHER is diagnosing and monitoring diseases through skin, hair, blood and nails. SAIF-SPIHER had a successful innings in monitoring the efficacy of Metformin Hydrochloride through hair in diabetic patients by using FTIR-ATR technique.
- SAIF-SPIHER with the versatile FTIR-ATR spectrophotometer is able to discriminate clearly the breast cancer hair tissue from the normal hair tissue.
- SAIF-SPIHER is successful in deploying blood, hair and nail tissues as probes to diagnose asthma and to monitor the efficacy of asthmatic drugs by FTIR-ATR and UV-Visible spectroscopic techniques.
- Various kinds of anemia are discriminated from normal blood, hair, skin and nail tissues by FTIR-ATR and UV-Visible spectroscopic techniques. SAIF-SPIHER is restless to do more, than just diagnosis anemia, so it has started monitoring the efficacy of the treatment using molecular spectroscopic techniques.
- SAIF-SPIHER has exhibited its smartness in diagnosing thyroid, monitoring the efficacy and also in exploring the molecular composition of the traditional ayurvedic drug involved in treating the thyroid.
- Tracking the efficacy of ayurvedic drugs in treating Athlete's foot is made in ease with FTIR-ATR housed at SAIF-SPIHER.
- Apart from disease diagnosis, SAIF-SPIHER has strongly proved its versatility in determining the opportunities of vermiculite as a best weathering material could be employed in civil constructions.
- SAIF-SPIHER has contributed a lot more in synthesizing and characterizing the metallic nano particles.
- SAIF-SPIHER has played a major role in unveiling the mysteries of nyctinastic and non-nyctinastic movements of two different tamarind leaves using FTIR-ATR technique. The complete photo absorption in the UV region of *Pongamia* leaves is determined using UV-VIS DTS spectroscopic technique available at SAIF-SPIHER.
- SAIF-SPIHER extended its assistance in finding the lower glycemic index of millets and traditional rice varieties by using FTIR-ATR spectroscopic technique.
- SAIF-SPIHER made quite a stir in disclosing the inedible polyethylene coatings over the fruits, paper cups and imitation paper banana leaves through FTIR-ATR spectral signatures.

SAIF-SPIHER humbly marching towards finding more for the society, to practice the research approach for global reach.