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Bionano Sensor in Molecular Imaging and Fusion Technology

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Recent developments in molecular sensors has revolutionized the medical imaging field owing to their enhanced diagnostic values. Hence they are being widely called upon by the medical community to make it as a routine investigative tools for accurate and confirmative diagnosis of various diseases particularly malignancy. The challenges of accurate diagnosis based on imaging were mostly due to the lack of specificity of the sensors as well as the poor resolutions of scanners. On the other hand, the earlier diagnosis totally depends on how accurately one can predict the changes that occur inside the tissues when the disease occurs. Hence it is vital to interact with the tissues at nano level to decode the secrets of the mechanisms of the diseased tissues. Tissue characterization based on its interaction with the sensors as well as the triggers by the EM radiations is of paramount importance which are occurring at the nanoscopical level to femtoscopical. In the proposed workshop the synthesis, purification, characterization and labeling in vivo and in vitro would be presented. The fusing of sensors with immunological products and the fusion of two different modality scanners viz. PET-CT, SPECT-CT and MRI-CT /USG would be dealt.

The following would be the brief of the topics covered in the workshop:

- Synthesis, purification, and characterization of nano sensors for imaging
- Biodistribution studies of sensors
- Interaction of sensors with tissues
- Sequestering agents, in vitro and in vivo labeling
- Fusion of nanosensors with immunological agents- Hybridoma technology
- Scanners and image fusion: PET- CT, SPECT-CT, MRI-CT/USG
- Technique optimization, Quality controls and reliability of the techniques
- Research perspectives and curriculum for higher studies