

**List of Project with details- 2019**

S.N	Project Title	Description	Preferred Students
<b>Faculty Name : Dr. Bindu Salim (Email id: bbs@psgias.ac.in)</b>			
1	Pressure Sensors	Design and analysis of MEMS structure for AIN based pressure sensor using CoventorWare or COMSOL	B.Tech/M.Tech
2	Ion sensitive FET	Modelling ionization layers of ISFET for sensing applications (Silvaco TCAD)	B.Tech/M.Tech
3	SiC transistors for power electronics applications	Study the switching characteristics (Silvaco TCAD)	B.Tech/M.Tech
4	Design of micro/ Nano fluidic channels for biomedical applications	Molecular modelling of fluids in a micro/nano channel (COMSOL)	B.Tech/M.Tech
5	AIN film based pressure sensing using PVD system	To study the piezoelectric effect of sputtered AIN film in capacitive mode.	M.Tech
6	Flexible Thin film transistor fabrication using PVD system	To study the performance parameters of TFT using flexible substrate.	M.Tech
<b>Faculty Name : Dr. Amitava Bhattacharya (Email id : abh@psgias.ac.in)</b>			
1	Wearable electronics for monitoring health	Wearable electronics are gaining interest among the consumers. The ease of such electronic device integrated in clothing allows constant monitoring of Patients Health.	M. Tech/M.Sc
2	Needleless electronspinning of nanofibers	Needleless electrospinning can produce bulk nanofibers which can be used as membrane, wound dressing or scaffold. The quantity produced by the process would be viable for scale up the technology for commercialization.	B.E/B.Tech
3	Adaptive camouflage or chameleon paint	The use of electrochromic nanoparticles lead to color changing paint suitable for defense application.	M. Tech/M.Sc
4	Smart Intrusion of electronic system	Piezoelectric sensor can be placed accordingly to detect any intrusion wired or wireless monitoring which is in high demand now days.	B.E/B.Tech
<b>Faculty Name : Dr. Kallol Mohanta (Email id: kma@psgias.ac.in)</b>			
1	Coating of electronic material on fabric	Wearable electronics is a rapidly evolving technology. For successful application of this technology electronic circuits and devices should be enabled to be printed or painted on	M. Tech/M.Sc

		fabric substrates. This short project aims to address one of the fundamental issue of coating electronic materials and test its durability.	
2	Cellulose based supercapacitor	Supercapacitors are going to be one of the most researched device in recent time. These devices found huge applications in energy market. A fully organic and biocompatible supercapacitor would be very interesting since it could be degraded easily after its lifetime. We would like to find the possibility of a cellulose based supercapacitor in this project.	M. Tech/M.Sc
3	Dye degradation by self-standing nanocomposite pad	Porphyrin dyes are one of the most used coloring material for various industries. But these molecules are big in size and do not decompose easily. Through this short project, we would like to make self-standing, reusable pads made up from nanocomposite material for the degradation of porphyrin dyes.	B.E/B.Tech
<b>Faculty Name : Dr. P. Biji (Email id: <a href="mailto:pbm@psgias.ac.in">pbm@psgias.ac.in</a>)</b>			
1	Functionalized MXenes based gas sensors	-	M.Sc
2	Development of thin film (SiN based materials) gas sensors	-	M.Tech
3	Design and fabrication of E-nose platform	-	B.Tech/M.Tech
4	Design and fabrication of nanoimprinted gas sensor devices	-	M.Tech/M.Sc
5	Scalable self-cleaning coatings	-	B.Tech/M.Tech
6	Fabrication and Performance analysis of single fuel cells based on durable carbon based catalyst support materials	-	B.Tech/M.Sc
7	In-situ Raman spectroscopic analysis of gas sensing materials	-	M.Sc
<b>Faculty Name : Dr. Geetha Priyadharshini (Email id: <a href="mailto:bgp@psgias.ac.in">bgp@psgias.ac.in</a>)</b>			
1	Development of Chalcogenide Thin Film Thermoelectric Modules	Thermoelectric materials are attractive due to their ability to convert waste heat into electricity. In this work, we intend to fabricate in-plane thermoelectric thin films by simple	

		spray pyrolysis method and evaluate the device performance using custom built Seebeck measurement system. This work has wide applications in the mid temperature range (200 -400 C) ranging from automobiles to industrial furnaces.	B.Tech/M.Sc/M.Tech
2	Evaluation of Stresses in Reactive sputtered deposited Cr and Zr thin films	The materials proposed in this work possess excellent hardness which is employed for cutting tool application. Evaluation of intrinsic stresses developed during the deposition is critical to understand the adhesion and wear resistance of the coating during machining. Therefore, systematic evaluation of stresses using surface profilometer would be carried out.	B.Tech/M.Sc/M.Tech
3	Development of Sputtered Mg-Zr thin films for Hydrogen storage	Mg-based alloy is a promising class of materials with storage capacities of more than 6 wt.%. It has been recognized that magnesium can be modified in different ways, e.g., by forming nano particles, alloying Mg with transition metals and adding catalysts. We are synthesizing and characterizing bulk Mg-TM alloys for hydrogen storage. This work will be in collaboration with external university.	B.Tech/M.Sc/M.Tech
<b>Faculty Name : Dr. Anuradha Ashok (Email id : anu@psgias.ac.in)</b>			
1	Development of thermoelectric module for power generation/refrigeration	-	M.Sc/M.Tech
2	Development of electrolytes/electrodes for solid oxide fuel cells	-	M.Sc/M.Tech
3	Development of oxide based transparent conductors	-	M.Sc/M.Tech
<b>Faculty Name : Dr. Gnanaprakash (Email id: dgp@psgias.ac.in)</b>			
1	Fabrication and design optimization of a heat transfer chamber for investigation of nano-enhanced phase change materials	The student will design and fabricate a chamber conceptualized for the purpose of studying the heat transfer characteristics of phase change materials that have been enhanced with the addition of nanomaterials. Analyses of heat transfer characteristics as well as material characterization are part of	M.Sc/M.Tech

		the scope of the project, with applications in energy capture and storage.	
2	Simulation of plasmonic materials for their qualitative and quantitative assessment for sensing applications	The student will use software including but not limited to python for simulating the optical properties of nanoparticles. The scope also includes the investigation of the response of such nanoparticles to gases such as CO, H <sub>2</sub> and NO, with applications in combustion and pollution monitoring.	M.Sc/M.Tech
<b>Faculty Name: Dr. Parthiban (Email id: spn@psgias.ac.in)</b>			
1	Development of metal oxide based thin-film transistor and circuit fabrication	-	M.Sc/M.Tech
2	Development of back-contact Silicon solar cell fabrication	-	M.Sc/M.Tech
<b>Faculty Name : Dr. R. Sivasubramanian (Email id: rss@psgias.ac.in)</b>			
1	Fabrication of spinel based materials for supercapacitor applications	The works involves the synthesis and analyze the charge storage capacity in a two electrode system.	M.Sc/M.Tech
2	Development of anode materials for lithium ion battery	The project deals with preparation of metal oxide nanostructures and test their performance in lithium ion battery applications.	M.Sc/M.Tech