

Shafiul Monir

FdEng BEng MSc
AMIMechE AMRAeS

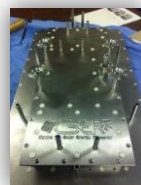
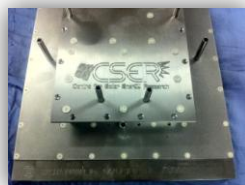
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Biography:



In 2008 Shafiul gained his BEng (Hons)(2:1), in Aeronautical Mechanical Engineering at Glyndŵr University, Wrexham, North Wales. Following graduation he wished to further his academic research in computational fluid dynamics (CFD), and enrolled into an MSc in Aeronautical Engineering with emphasis on CFD modelling. During his master studies Shafiul was approached by Dr. Vincent Barrioz, senior research lecturer, along with his colleagues Dr. Dan Lamb & Dr. Giray Kartopu; members of the Centre for Solar Energy Research (CSER) team. They required his CFD assistance on studying ways to achieve uniform deposition of thin films in an inline Metalorganic Chemical Vapour Deposition (MOCVD) process, located at OptTIC Glyndŵr, St Asaph, North Wales. Facing a new challenge; Shafiul took the opportunity to apply his knowledge of CFD within a new field of chemical engineering with the helpful supervision from Dr. Xiaogang Yang, learning and adapting very quickly to the new environment of *Chemical CFD*.

Shafiul joined the CSER team in April 2011 to do his PhD under the supervision of Dr. Vincent Barrioz, Prof. Stuart Irvine and Dr. Xiaogang Yang, on a KESS (Knowledge Economy Skills Scholarships) funded project from European Social Fund (ESF) and sponsored by Scanwel Ltd, Llandderfel, Bala, Gwynedd. Industrial supervision is provided by Ian Owen and Steve Trueman for the project.

Shafiul's project focuses on deposition of cadmium telluride (CdTe) structures for thin film photovoltaic (PV) on a heated moving substrate using atmospheric pressure metalorganic chemical vapour deposition (AP-MOCVD). Because there are many advantages to move away from vacuum based deposition techniques the project will focus on the design, development and testing of novel coating head arrangements through advanced CFD modelling. The novel coating heads will fit within an AP-MOCVD inline process, being built at CSER as part of Solar Photovoltaic Academic Research Consortium (SPARC) Cymru project funded by the Lower Carbon Research Institute (LCRI) through the European Convergence Region Programme. The establishment of the gas and surface chemical reactions accruing during the pyrolysis of CdTe and Cadmium Sulphide (CdS) by MOCVD, will provide valuable input towards scaling up thin film solar cells by AP-MOCVD in Wales. The optimisation of the process through methodical experiments correlated with models should result in improvements of material utilisation and uniformity of the precursor gas delivery. The characterisation of deposited layers and full PV devices will allow the effectiveness of the new designed process to be assessed and recommendation to be given.



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