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MOCVD - THE ROUTE TO HIGH PERFORMANCE COMPOUND SEMICONDUCTOR OPTOELECTRONIC DEVICES

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Abstract Metal Organic Chemical Vapour Deposition (MOCVD) is being used successfully in production and research for the fabrication of III-V and II-VI heterostructures for a wide variety of optoelectronic devices of integrated circuits (OEICs). Photocathodes have been manufactured using MOCVD GaAs/AlGaAs structures for almost 10 years, and most of the solar cells currently in use in space have been fabricated from MOCVD materials. If you own a compact disc player it is more than likely that the GaAs/AlGaAs laser diode was manufactured using MOCVD material. Increasingly the components employed in optical communications systems - lasers, detectors, modulators and waveguides - are being produced using MOCVD prepared GaInAs(P)/InP heterostructures. In the research laboratory considerable progress has been made in combining electronic and optoelectronic device structures on the same InP substrate to create OEICs, the building blocks for future communication systems. Research into MOCVD of CdHgTe is also now paying dividends, and detector arrays for use in IR imaging systems are being fabricated in CdHgTe structures deposited on CdTe and GaAs substrates. In this talk examples of optoelectronic devices and OEICs will be discussed and the MOCVD equipment employed to prepare the semiconductor structures described.