



CONTENTS

Proceedings Title page	iii
Contents	v
Index of Contributors	ix
Preface	
A.G.U. Perera, H.C. Liu and S.D. Gunapala	81
Organizing Committee	82
Sponsors	83
Workshop Photo page	84
List of Participants	85
<i>Infrared Device Physics</i>	
Advanced space-based detector research at the Air Force Research Laboratory	
P.M. Alsing, D.A. Cardimona, D.H. Huang, T. Apostolova, W.R. Glass and C.D. Castillo	89
Autocorrelation measurements of free-electron laser radiation using a two-photon QWIP	
H. Schneider, O. Drachenko, S. Winnerl, M. Helm, T. Maier and M. Walther	95
Non-Gaussian noise in quantum wells infrared photodetectors	
N. Snapi, Y. Paltiel, A. Zussman, G. Jung and A. Ben Simon	100
Effect of ion implantation on quantum well infrared photodetectors	
N. Hatefi-Kargan, D.P. Steenson, P. Harrison, E.H. Linfield, S. Khanna, S. Chakraborty, P. Dean, P.C. Upadhyaya, I. Farrer, D.A. Ritchie, B. Sherliker and M. Halsall	106
Van Hove singularities in intersubband transitions in multi-quantum well photodetectors	
J. Le Rouzo, I. Ribet-Mohamed, R. Haidar, M. Tauvy, N. Guérineau, E. Rosencher and S.L. Chuang	113
Normal incidence silicon doped p-type GaAs/AlGaAs quantum-well infrared photodetector on (1 1 1)A substrate	
T. Mei, H. Li, G. Karunasiri, W.J. Fan, D.H. Zhang, S.F. Yoon and K.H. Yuan	119
Optimization of corrugated-QWIPs for large format, high quantum efficiency, and multi-color FPAs	
K.-K. Choi, C. Monroy, V. Swaminathan, T. Tamir, M. Leung, J. Devitt, D. Forrai and D. Endres	124
Band structure and impurity effects on optical properties of quantum well and quantum dot infrared photodetectors	
D.Z.-Y. Ting, Y.-C. Chang, S.V. Bandara, C.J. Hill and S.D. Gunapala	136
Performance improvements of ultraviolet/infrared dual-band detectors	
A.G.U. Perera, G. Ariyawansa, M.B.M. Rinzan, M. Stevens, M. Alevli, N. Dietz, S.G. Matsik, A. Asghar, I.T. Ferguson, H. Luo, A. Bezinger and H.C. Liu	142
<i>Physics of Q Dots</i>	
Demonstration of 640 × 512 pixels long-wavelength infrared (LWIR) quantum dot infrared photodetector (QDIP) imaging focal plane array	
S.D. Gunapala, S.V. Bandara, C.J. Hill, D.Z. Ting, J.K. Liu, S.B. Rafol, E.R. Blazejewski, J.M. Mumolo, S.A. Keo, S. Krishna, Y.-C. Chang and C.A. Shott	149

Multi-color tunneling quantum dot infrared photodetectors operating at room temperature G. Ariyawansa, A.G.U. Perera, X.H. Su, S. Chakrabarti and P. Bhattacharya	156
Enhanced infrared absorption of spatially ordered quantum dot arrays W.Q. Ma, Y.W. Sun, X.J. Yang, M. Chong, D.S. Jiang and L.H. Chen.	162
Temperature dependent responsivity of quantum dot infrared photodetectors S.Y. Wang, M.C. Lo, H.Y. Hsiao, H.S. Ling and C.P. Lee.	166
<i>Novel Directions (Multi Broad Band Detectors)</i>	
Designs of broadband quantum-well infrared photodetectors and 8–12 μm test device results H.C. Liu, D. Goodchild, M. Byloos, M. Buchanan, Z.R. Wasilewski, J.A. Gupta, A.J. SpringThorpe and G.C. Aers	171
Plasmonic enhancing nanoantennas for photodetection P. Hewagegana and M.I. Stockman.	177
NIR, MWIR and LWIR quantum well infrared photodetector using interband and intersubband transitions F.D.P. Alves, G. Karunasiri, N. Hanson, M. Byloos, H.C. Liu, A. Bezinger and M. Buchanan	182
MBE grown type-II MWIR and LWIR superlattice photodiodes C.J. Hill, J.V. Li, J.M. Mumolo and S.D. Gunapala.	187
<i>Novel Directions (Terahertz Detectors)</i>	
Design of terahertz quantum well photodetectors H.C. Liu, H. Luo, C.Y. Song, Z.R. Wasilewski, A.J. Spring Thorpe and J.C. Cao	191
Si doped GaAs/AlGaAs terahertz detector and phonon effect on the responsivity A.B. Weerasekara, M.B.M. Rinzan, S.G. Matsik, A.G.U. Perera, M. Buchanan, H.C. Liu, G. von Winckel, A. Stintz and S. Krishna	194
Quantum mechanical effects in internal photoemission THz detectors M.B. Rinzan, S. Matsik and A.G.U. Perera.	199
Characteristics of high responsivity 8.5 μm InGaAs/InP QWIPs grown by metalorganic vapour phase epitaxy B.M. Arora, A. Majumdar, A.P. Shah, M.R. Gokhale, S. Ghosh, A. Bhattacharya and D. Sengupta	206
Monolithically integrated near-infrared and mid-infrared detector array for spectral imaging S.V. Bandara, S.D. Gunapala, D.Z. Ting, J.K. Liu, C.J. Hill, J.M. Mumolo and S. Keo	211
<i>QWIP QDIP Focal Plane Arrays</i>	
Towards dualband megapixel QWIP focal plane arrays S.D. Gunapala, S.V. Bandara, J.K. Liu, J.M. Mumolo, C.J. Hill, S.B. Rafol, D. Salazar, J. Woolaway, P.D. LeVan and M.Z. Tidrow.	217
Research topics at Thales Research and Technology: Small pixels and third generation applications A. Nedelcu, E. Costard, P. Bois and X. Marcadet	227
Development of a 1K \times 1K, 8–12 μm QWIP array M. Jhabvala, K.K. Choi, C. Monroy and A. La	234
Material considerations for third generation infrared photon detectors A. Rogalski	240
LWIR/SWIR switchable two color device based on InP/InGaAs integrated HBT/QWIP N. Cohen, R. Gardi, G. Sarusi, A. Sa'ar, M. Byloos, A. Bezinger, A.J. SpringThorpe and H.C. Liu.	253
THALES long wave QWIP thermal imagers E. Costard and Ph. Bois	260
<i>Other Detector Technologies</i>	
1/f Noise in dye-sensitized solar cells and NIR photon detectors P.V.V. Jayaweera, P.K.D.D.P. Pitigala, M.K.I. Seneviratne, A.G.U. Perera and K. Tennakone	270

Effects of a p-n junction on heterojunction far infrared detectors S.G. Matsik, M.B.M. Rinzan, A.G.U. Perera, H.H. Tan, C. Jagadish and H.C. Liu	274
Spin split-off transition based IR detectors operating at high temperatures P.V.V. Jayaweera, S.G. Matsik, K. Tennakone, A.G.U. Perera, H.C. Liu and S. Krishna	279
Molecular beam epitaxy growth of HgCdTe for high performance infrared photon detectors Y. Chang, C. Fulk, J. Zhao, C.H. Grein and S. Sivananthan	284