

## Curriculum Vitae - Roberto Macaluso

### INFORMAZIONI PERSONALI:

Cognome: Macaluso  
Nome: Roberto  
Recapito: Dipartimento di Ingegneria, Viale delle Scienze (ed. 9), Palermo

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### FORMAZIONE E TITOLI:

2003: Dottorato di ricerca (PhD) in Fisica presso la University of Strathclyde, Institute of Photonics (Glasgow, UK).  
1999: Laurea in Ingegneria Elettronica (110/110 e lode) presso l'Università degli Studi di Palermo.

### ESPERIENZE PROFESSIONALI:

2023 - presente: Professore Associato (IINF-01/A - Elettronica, 09/E3) – Università degli Studi di Palermo, Dipartimento di Ingegneria.  
Responsabile del *Thin Films Laboratory* (TFL) del Dipartimento di Ingegneria.  
2006 - 2023: Ricercatore confermato (RU), SSD: ING-INF/01, SC: 09/E3 – Università di Palermo, Dipartimento di Ingegneria e precedenti denominazioni.  
2007 - 2009: Marie Curie Intra-European Fellow – Ben Gurion University, Dipartimento di Fisica (Beer Sheva, Israel).  
2003 – 2005: Post-Doct Scholar – Infineon Technologies AG, Corporate Research Photonics (Munich, Germany).

### ATTIVITÀ DI RICERCA:

- Fabbricazione e caratterizzazione di film sottili di VO<sub>2</sub> e MoO<sub>3</sub> per applicazioni fotoniche.
- Progettazione, processing e fabbricazione di *memristor* basati su ossidi metallici (HfO<sub>2</sub>, ZnO, VO<sub>2</sub>, Ta<sub>2</sub>O<sub>5</sub>, TiO<sub>2</sub>) e materiali organici/flessibili.
- Progettazione, fabbricazione e caratterizzazione di LED nanostrutturati n-ZnO/p-GaN.
- Progettazione, fabbricazione e caratterizzazione di dispositivi a eterogiunzione per applicazioni fotoniche e optoelettroniche.

**QUALIFICAZIONI ACCADEMICHE:**

Nov 2023 – Presente: Abilitazione scientifica nazionale (ASN) per Professore di I fascia (IINF-01/A - Elettronica, 09/E3).

**ATTIVITÀ DIDATTICA:**

- Nanoelectronics (6 CFU), Corso di Laurea Magistrale (LM-29) in Electronics Engineering, Università degli Studi di Palermo.
- Nanoelectronics (9 CFU), Corso di Laurea Magistrale telematica (LM-27/LM-29) in Electronics and Telecommunications Engineering, Università degli Studi di Palermo.
- Elettronica 2 (9 CFU), Corso di Laurea in Ingegneria Elettronica (L-8), Università degli Studi di Palermo.
- Sensori e strumentazione biomedica (9 CFU), Corso di Laurea in Ingegneria Biomedica (L-9), Università degli Studi di Palermo (sede di Caltanissetta).
- Relatore di più di 40 tesi di laurea triennale e magistrale.
- Tutor di 14 studenti per la prova finale della Laurea triennale in Ingegneria Elettronica.
- Componente del Collegio di dottorato in *Information and Communication Technologies* (ICT).
- Supervisore di 3 studenti di dottorato.

**VISITING ACADEMIC POSITIONS:**

Ago 2022 - Nov 2022: Visiting Lecturer presso la Universidad Nacional de San Martin, Escuela de Ciencia y Tecnologia, San Martin, Buenos Aires (Argentina).  
Insegnamento impartito: *"Materials and Technology for Nanoelectronics"*.

**PROGETTI FINANZIATI:**

- Nov 2023 - Presente: *"Mid infrared metasurfaces and metamaterials for microplastic sensing applications"*. PRIN PNRR 2022. Project code: PRJ-1110. Collaborazione con il CNR.  
**Responsabilità:** *Principal Investigator* (PI).
- Set 2023 - Presente: *"C-MOOVO: Combined Molybdenum trioxide/Vanadium dioxide structures for a new class of tunable photonic devices in the mid-infrared"*. PRIN 2022. Project code: PRJ-0885. Collaborazione con l'Università di Roma La Sapienza.  
**Responsabilità:** Responsabile della Unità Locale di ricerca (Università di Palermo).

- Ott. 2022 - Presente: "*Ecosistema dell'Innovazione Sicilian MicronanoTech Research And Innovation Center*" (SAMOTHRACE). PNRR, project code: ECS00000022.  
**Responsabilità:** Componente della Unità locale di ricerca (Università di Palermo).
- Ott. 2021 - Presente: "*METamateriali a cambiamento di fase per telecomunicazioni satellitari sicure*" (METEORE). Piano Nazionale della Ricerca Militare (PNRM 2020, project n. a2019.234). Collaborazione con l'Università di Padova e con l'Università di Roma La Sapienza.  
**Responsabilità:** Responsabile dell'Unità locale di ricerca (Università di Palermo).

### ATTIVITÀ GESTIONALI:

- Apr. 2021 – 2025: Segretario del Corso di Dottorato Internazionale in *Information and Communication Technologies* (ICT) dell'Università degli Studi di Palermo (Coordinatrice Prof.ssa Ilenia Tinnirello).
- 2016 – 2019: Delegato dal Coordinatore del Consiglio Interclasse dei Corsi di Studio (CICS) in Ingegneria Elettronica dell'Università degli Studi di Palermo ai Tirocini per i Corsi di Laurea Triennale e Magistrale in Ingegneria Elettronica.
- 2013 – 2016: Delegato dal Coordinatore del Consiglio Interclasse dei Corsi di Studio (CICS) in Ingegneria Elettronica dell'Università degli Studi di Palermo per la preparazione dell'orario delle lezioni e degli esami per i Corsi di Laurea Triennale e Magistrale in Ingegneria Elettronica.
- Mag. 2024 – Presente: Componente della Commissione di Assicurazione della Qualità (AQ) per il Corso di Dottorato in *Information and Communication Technologies* (ICT).
- Nov. 2023 – Presente: Componente della Commissione paritetica Docenti-Studenti (CPDS) del Dipartimento di Ingegneria per il Corso di Laurea Magistrale in *Electronics and Telecommunications Engineering* - LM-27/LM-29 (fully online).

### PUBBLICAZIONI SCIENTIFICHE

#### Articoli su riviste ISI:

- 1) D. Scirè, **R. Macaluso**, M. Mosca, M. P. Casaletto, O. Isabella, M. Zeman, and I. Crupi, Defect Density Analysis of WO<sub>x</sub> and MoO<sub>x</sub> Thin Films Grown by Pulsed Laser Deposition for Heterojunction Solar Cell Applications, *ACS Appl. Energy Mater.*, **8**, 13, 9016–9028 (2025). DOI: <https://doi.org/10.1021/acsaem.5c00629>
- 2) A. Bile, D. Ceneda, M. Centini, F. V. Lupo, D. Persano Adorno, **R. Macaluso**, K. Aydin and M. C. Larciprete, Thermo-optical properties of  $\alpha$ -MoO<sub>3</sub> thin films in the mid-infrared and phonon frequency shift, *J. Phys. Photonics*, **7**, 025015 (2025). DOI: <https://iopscience.iop.org/article/10.1088/2515-7647/adbced>

- 3) A. Boughelout, A. Khiat, **R. Macaluso**, Photocatalysis of Methyl Orange (MO), Orange G (OG), Rhodamine B (RhB), Violet and Methylene Blue (MB) Under Natural Sunlight by Ba-Doped BiFeO<sub>3</sub> Thin Films, *Materials*, **18**, 887 (2025). DOI: <https://doi.org/10.3390/ma18040887>
- 4) E. Petronijevic, M. C. Larciprete, M. Centini, L. Pronti, V. Aglieri, L. Razzari, A. Toma, **R. Macaluso**, R. Li Voti, and C. Sibilia, Active infrared tuning of metal–insulator-metal resonances by VO<sub>2</sub> thin film. *Scientific Reports*, **14**, 25324 (2024). DOI: 10.1038/s41598-024-75430-0
- 5) V. Mussi, F. A. Bovino, R. Falsini, D. Dalozio, F. V. Lupo, R. Kunjumon, R. Li Voti, T. Cesca, **R. Macaluso**, C. Sibilia, and G. Mattei, Polarized Raman mapping and phase-transition by CW excitation for fast purely optical characterization of VO<sub>2</sub> thin films, *Scientific Reports*, **14**, 19338 (2024). DOI: <https://www.nature.com/articles/s41598-024-70301-0>
- 6) F. V. Lupo, M. Mosca, S. Bagdzevivi, R. Rani, W. Maudez, E. Wagner, M. P. Casaletto, S. Basile, G. Benvenuti, I. Crupi, **R. Macaluso**, HfO<sub>2</sub> Thin Films by Chemical Beam Vapor Deposition for Large Resistive Switching Memristor, *IEEE Journal of the Electron Devices Society*, **12**, pp. 508-515 (2024) DOI: 10.1109/JEDS.2024.3416516
- 7) A. Bile, D. Ceneda, S. Vaghefi Esfidani Maryam, D. Scirè, G. Buscarino, M. Mosca, D. Persano Adorno, **R. Macaluso**, R. Li Voti, C. Sibilia, T. G. Folland, K. Aydin, M. Centini, M. C. Larciprete, Room-Temperature Tuning of Mid-Infrared Optical Phonons and Plasmons in W-doped VO<sub>2</sub> thin films, *Optical Materials*, **154**, 115732 (2024). DOI: 10.1016/j.optmat.2024.115732
- 8) F. V. Lupo, D. Margineda, Daniel, C. Puglia, G. De Simoni, **R. Macaluso**, F. Giazotto, O. Mukhanov, M. Arzeo, Digital Logic Based on Superconducting Gate-Controlled Transistors, *IEEE Transaction on Applied Superconductivity*, **34**, 1300405 (2024). DOI: 10.1109/TASC.2024.3355327
- 9) I. Crupi, G. Bellocchi, R. Vabres, C. Bongiorno, P. Badalà, **R. Macaluso**, M. Mosca, S. Rascunà, Toward A Metal-Free Contact Based on Multilayer Epitaxial Graphene On 4H-SiC, *IEEE Electron Device Letters*, **45**, pp. 1109-1112 (2024). DOI: 10.1109/LED.2024.3403797
- 10) M. C. Larciprete, D. Ceneda, C. Yang, S. Abedini Dereshgi, F. V. Lupo, M. P. Casaletto, **R. Macaluso**, M. Antezza, Z. M. Zhang, M. Centini, and K. Aydin, Large-area polycrystalline  $\alpha$ -MoO<sub>3</sub> thin films for IR photonics, *J. Phys. D: Appl. Phys.* **57**, 135107 (2024). DOI: [10.1088/1361-6463/ad18f6](https://doi.org/10.1088/1361-6463/ad18f6)
- 11) R. Li Voti, K. Agharahimli, M. Misano, M. C. Larciprete, G. Leahu, F. A. Bovino, C. Sibilia, T. Cesca, G. Mattei, F. V. Lupo, **R. Macaluso**, Optothermal characterization of vanadium dioxide films by Infrared Thermography, *International Journal of Thermal Sciences*, **197**, 108832 (2024). DOI: <https://doi.org/10.1016/j.ijthermalsci.2023.108832>
- 12) B. Kalinic, T. Cesca, A. Lovo, C. Scian, **R. Macaluso**, F. Bovino, R. Li Voti, C. Sibilia, and G. Mattei, Active Modulation of Er<sup>3+</sup> Emission Lifetime by VO<sub>2</sub> Phase-Change Thin Films. *Advanced Photonics Research*, **5**, 2300242 (2023). DOI: <https://doi.org/10.1002/adpr.202300242>
- 13) M. C. Larciprete, D. Ceneda, D. Scirè, M. Mosca, D. Persano Adorno, S. A. Dereshgi, **R. Macaluso**, R. Li Voti, C. Sibilia, T. Cesca, G. Mattei, K. Aydin, M. Centini, Tunable IR perfect absorbers enabled by tungsten doped VO<sub>2</sub> thin films, *APL Materials*, **11**, 091107 (2023). DOI: <https://doi.org/10.1063/5.0164410>
- 14) D. Trapani, **R. Macaluso**, I. Crupi, M. Mosca, Color Conversion Light-Emitting Diodes Based on Carbon Dots: A Review, *Materials*, **15**, 5450 (2022). DOI: <https://doi.org/10.3390/ma15155450>.
- 15) D. Scirè, **R. Macaluso**, M. Mosca, M. P. Casaletto, O. Isabella, M. Zeman, and I. Crupi, Density of states characterization of TiO<sub>2</sub> films deposited by Pulsed Laser Deposition for Heterojunction solar cells, *Nano Research*, **15**, 4048–4057 (2022). DOI: 10.1007/s12274-021-3985-8.
- 16) F. V. Lupo, D. Scirè, M. Mosca, I. Crupi, L. Razzari, and **R. Macaluso**, Custom measurement system for memristor characterisation, *Solid State Electronics*, **186**, 108049 (2021). DOI: <https://doi.org/10.1016/j.sse.2021.108049>.
- 17) D. Scirè, **R. Macaluso**, M. Mosca, S. Mirabella, A. Gulino, O Isabella, M. Zeman, and I. Crupi, Characterization of the defect density states in MoO<sub>x</sub> for c-Si solar cell applications, *Solid State Electronics*, **185**, 108135 (2021). DOI: <https://doi.org/10.1016/j.sse.2021.108135>

- 18) F. Yue, A. Aadhi, R. Piccoli, V. Aglieri, **R. Macaluso**, A. Toma, R. Morandotti, and L. Razzari, Rotational Doppler Frequency Shift from Time-Evolving High-Order Pancharatnam–Berry Phase: A Metasurface Approach, *Laser & Photonics Reviews*, **15**, 2000576 (2021). DOI: <http://dx.doi.org/10.1002/lpor.202000576>
- 19) A. Boughelout, **R. Macaluso**, I. Crupi, B. Megna, A. Brighet, M. Trari, M. Kechouane: "Effect of the Si doping on the properties of AZO/SiC/Si heterojunctions grown by low temperature pulsed laser deposition", *Semiconductor Science and Technology*, **36**, 015001 (2020). Doi: [10.1088/1361-6641/abbc42](https://doi.org/10.1088/1361-6641/abbc42)
- 20) **R. Macaluso**, G. Lullo, I. Crupi, D. Sciré, F. Caruso, E. Feltin and M. Mosca, Progress in Violet Light-Emitting Diodes Based on ZnO/GaN Heterojunction, *Electronics*, **9**, 991 (2020); doi:10.3390/electronics9060991
- 21) A. Boughelout, **R. Macaluso**, M. Kechouane, M. Trari, Photocatalysis of rhodamine B and methyl orange degradation under solar light on ZnO and Cu<sub>2</sub>O thin films, *Reaction Kinetics, Mechanisms and Catalysis*, **129**, 1115 (2020).
- 22) V. Aglieri, X. Jin, A. Rovere, R. Piccoli, D. Caraffini, S. Tuccio, F. De Angelis, R. Morandotti, **R. Macaluso**, A. Toma, L. Razzari, Improving nanoscale terahertz field localization by means of sharply tapered resonant nanoantennas, *Nanophotonics*, **9**, 683 (2020). DOI: <http://dx.doi.org/10.1515/nanoph-2019-0459>
- 23) F. Yue, V. Aglieri, R. Piccoli, **R. Macaluso**, A. Toma, R. Morandotti, L. Razzari: "Highly sensitive polarization rotation measurement through a high-order vector beam generated by a metasurface", *Adv. Mater. Technol.*, **1901008** (2020).
- 24) T. Cesca, C. Scian, E. Petronijevic, G. Leahu, R. Li Voti, G. Cesarini, **R. Macaluso**, M. Mosca, C. Sibilìa, G. Mattei: Correlation between in situ structural and optical characterization of the semiconductor-to-metal phase transition of VO<sub>2</sub> thin films on sapphire, *Nanoscale*, **12**, 851 (2020). DOI: <http://dx.doi.org/10.1039/c9nr09024j>
- 25) **R. Macaluso**, G. Lullo, I. Crupi, F. Caruso, E. Feltin, M. Mosca, Current Spreading Length and Injection Efficiency in ZnO/GaN-Based Light-Emitting Diodes, *IEEE Transactions on Electron Devices*, **66**, Article number 8856269, Pages 4811-4816 (2019). DOI: <http://dx.doi.org/10.1109/TED.2019.2942183>
- 26) V. Figà, H. Ustab, **R. Macaluso**, U. Salznerd, M. Ozdemirb, B. Kulyke, O. Krupkaf, M. Bruno, Electrochemical polymerization of ambipolar carbonyl-functionalized indenofluorene with memristive properties, *Optical Materials*, **94**, 187 (2019).
- 27) A. Boughelout, **R. Macaluso**, I. Crupi, B. Megna, M. S. Aida, and M. Kechouane, Improved Cu<sub>2</sub>O/AZO Heterojunction by Inserting a Thin ZnO Interlayer Grown by Pulsed Laser Deposition, *Journal of Electronic Materials*, **48**, 4381 (2019).
- 28) A. Boughelout, N. Zebbar, **R. Macaluso**, Z. Zohour, A. Bensouilah, A. Zaffora, M.S. Aida, M. Kechouane, M. Trari, Rhodamine (B) photocatalysis under solar light on high crystalline ZnO films grown by home-made DC sputtering, *Optik*, **174**, 77 (2018).
- 29) A. Zaffora, **R. Macaluso**, H. Habazaki, I. Valov, M. Santamaria, Electrochemically prepared oxides for resistive switching devices, *Electrochimica Acta*, **274**, 103 (2018). DOI: <http://dx.doi.org/10.1016/j.electacta.2018.04.087>
- 30) V. Aglieri, A. Zaffora, G. Lullo, M. Santamaria, F. Di Franco, U. Lo Cicero, M. Mosca, and **R. Macaluso**, Resistive switching in microscale anodic titanium dioxide-based memristors, *Superlattices and Microstructures*, Vol. **113**, 135 (2018). DOI: <http://dx.doi.org/10.1016/j.spmi.2017.10.031>
- 31) A. Zaffora, F. Di Franco, F. Di Quarto, **R. Macaluso**, M. Mosca, H. Habazaki, and M. Santamaria, The Effect of Nb Incorporation on the Electronic Properties of Anodic HfO<sub>2</sub>, *ECS Journal of Solid State Science and Technology*, Vol. **6**, Issue 4, N25-N31 (2017).
- 32) M. Barbouche, R. B. Zaghouani, N. E. Benammar, V. Aglieri, M. Mosca, **R. Macaluso**, K. Khirouni, H. Ezzaouia: "New process of silicon carbide purification intended for silicon passivation", *Superlattices and Microstructures*, **101**, 512 (2017).
- 33) F. Caruso, M. Mosca, S. Rinella, **R. Macaluso**, C. Calì, F. Saiano, E. Feltin, Frequency Down-Conversion Stability of PMMA Coatings in Hybrid White Light-Emitting Diodes, *Journal of Electronic Materials*, **45**, 682 (2016).
- 34) A. Sacco, M. S. Di Bella, M. Gerosa, A. Chiodoni, S. Bianco, M. Mosca, **R. Macaluso**, C. Calì, C. F. Pirri, Enhancement of photoconversion efficiency in dye-sensitized solar cells exploiting pulsed laser deposited niobium pentoxide blocking layers, *Thin Solid Films*, **574**, 38 (2015).

- 35) F. Di Franco, M. Santamaria, F. Di Quarto, **R. Macaluso**, M. Mosca, and C. Calì, Electrochemical Fabrication and Physicochemical Characterization of Metal/High-*k* Insulating Oxide/Polymer/Electrolyte Junctions, *Journal of Physical Chemistry C*, **118**, 29973 (2014).
- 36) **R. Macaluso**, M. Mosca, V. Costanza, A. D'Angelo, G. Lullo, F. Caruso, C. Calì, F. Di Franco, M. Santamaria, and F. Di Quarto, Resistive switching behaviour in ZnO and VO<sub>2</sub> memristors grown by pulsed laser deposition, *Electronics Letters*, **50**, 262 (2014). DOI: <http://dx.doi.org/10.1049/el.2013.3175>
- 37) M. Mosca, **R. Macaluso**, G. Randazzo, M. Di Bella, F. Caruso, C. Calì, F. Di Franco, M. Santamaria, and F. Di Quarto, Anodized Ti-Si Alloy as Gate Oxide of Electrochemically-Fabricated Organic Field-Effect Transistors, *ECS Solid State Letters*, **3**, 7 (2014).
- 38) M. Mosca, **R. Macaluso**, C. Calì, R. Butté, S. Nicolay, E. Feltn, D. Martin, N. Grandjean, Optical, structural, and morphological characterisation of epitaxial ZnO films grown by pulsed-laser deposition, *Thin Solid Films*, **539**, 55 (2013).
- 39) **R. Macaluso**, M. Mosca, C. Calì, F. Di Franco, M. Santamaria, F. Di Quarto, and J.-L. Reverchon, Erroneous *p*-type assignment by Hall effect measurements in annealed ZnO films grown on InP, *Journal of Applied Physics*, **113**, 164508 (2013).
- 40) M. Mosca F. Caruso, L. Zambito, **R. Macaluso**, C. Calì, and E. Feltn, Hybrid LEDs pave way to new lighting applications, *Photonics Spectra*, **47**, 60 (2013).
- 41) F. Caruso, M. Mosca, **R. Macaluso**, E. Feltn, and C. Calì, Generation of white LED light by frequency downconversion using perylene-based dye, *Electronics Letters*, **48**, 1417 (2012).
- 42) P. G. Petrov, S. Machluf, S. Younis, **R. Macaluso**, T. David, B. Hadad, Y. Japha, M. Keil, E. Joselevich, and R. Folman, Trapping cold atoms using surface-grown carbon nanotubes, *Physical Review A*, **79**, 043403 (2009).
- 43) B. K. Saravanan, T. Wenger, C. Hanke, P. Gerlach, M. Peschke and **R. Macaluso**, Wide temperature operation of 40-Gb/s 1550-nm electroabsorption modulated lasers, *IEEE Photonics Technology Letters*, **18**, 862 (2006).
- 44) A.H. Clark, S. Calvez, N. Laurand, **R. Macaluso**, H.D. Sun, M.D. Dawson, T. Jouhti, J. Kontinnen and M. Pessa, Long-Wavelength Monolithic GaInNAs Vertical-Cavity Optical Amplifiers, *IEEE Journal of Quantum Electronics*, **40**, 878 (2004).
- 45) S. Calvez, J.-M. Hopkins, A. A. Smith, A.H. Clark, **R. Macaluso**, H.D. Sun, M.D. Dawson, T. Jouhti and M. Pessa, K. Gundogdu, K. C. Hall and T. F. Boggess, GaInNAs/GaAs Bragg-mirror-based structures for novel 1.3  $\mu\text{m}$  device applications, *Journal of Crystal Growth*, **268**, 457 (2004).
- 46) **R. Macaluso**, H. D. Sun, M. D. Dawson, F. Robert, A. C. Bryce, J. H. Marsh, and H. Riechert, Selective modification of bandgap in GaInNAs/GaAs structures by quantum well intermixing, *Applied Physics Letters*, **82**, 4259 (2003).
- 47) **R. Macaluso**, F. Robert, C. A. Bryce, S. Calvez, and M. D. Dawson, Resonant wavelength control of a 1.3  $\mu\text{m}$  microcavity by intracavity steam oxidation, *Semiconductor Science and Technology*, **18**, L12 (2003).
- 48) **R. Macaluso**, F. Robert, C. A. Bryce, S. Calvez, and M. D. Dawson, Microreflectivity studies of wavelength control in oxidised AlGaAs microcavity, *Material Science Engineering B*, **102**, 317 (2003).
- 49) H. D. Sun, **R. Macaluso**, S. Calvez, G. J. Valentine, D. Burns, M. D. Dawson, K. Gundogdu, K. C. Hall, T. F. Boggess, T. Jouthi, and M. Pessa, Effects of rapid thermal annealing on the optical properties of low-loss 1.3  $\mu\text{m}$  GaInNAs/GaAs saturable Bragg reflectors, *Journal of Applied Physics*, **96**, 1418 (2004).
- 50) H. D. Sun, **R. Macaluso**, M. D. Dawson, F. Robert, A. C. Bryce, J. H. Marsh and H. Riechert, Characterization of selective quantum well intermixing in 1.3  $\mu\text{m}$  GaInNAs/GaAs structures, *Journal of Applied Physics*, **94**, 1550 (2003).
- 51) H. D. Sun, **R. Macaluso**, S. Calvez, M. D. Dawson, F. Robert, A. C. Bryce, J. H. Marsh, P. Gilet, L. Grenouillet, A. Million, K. B. Nam, J. Y. Lin and H. X. Jiang, Quantum well intermixing in GaInNAs/GaAs structures, *Journal of Applied Physics*, **94**, 7581 (2003).
- 52) H. D. Sun, **R. Macaluso**, S. Calvez, M. D. Dawson, F. Robert, A. C. Bryce, J. H. Marsh, H. Riechert, P. Gilet, L. Grenouillet and A. Million, Selective modification of the band gaps of GaInNAs/GaAs structures by quantum well intermixing techniques, *Materials Science Engineering C*, **23**, 983 (2003).



- 53)** S. Calvez, A.H. Clark, J.-M. Hopkins, **R. Macaluso**, P. Merlin, H.D. Sun, M.D. Dawson, T. Jouhti and M. Pessa, 1.3  $\mu\text{m}$  GaInNAs optically-pumped vertical cavity semiconductor optical amplifier, *Electronics Letters*, **39**, 100 (2003).
- 54)** H. D. Sun, G. J. Valentine, **R. Macaluso**, S. Calvez, D. Burns and M. D. Dawson, Low-loss 1.3  $\mu\text{m}$  GaInNAs saturable Bragg reflector for high-power picosecond neodymium lasers, *Optics Letters*, **27**, 2124 (2002).
- 55)** C. Calì, **R. Macaluso**, M. Mosca, Effects of the process conditions on the plume of a laser-irradiated indium-tin-oxide target, *Optics Communications*, **197**, 341 (2002).
- 56)** C. Calì, **R. Macaluso**, M. Mosca, In situ monitoring of pulsed laser indium-tin-oxide film deposition by optical emission spectroscopy, *Spectrochimica Acta B*, **56**, 743 (2001).

### Capitoli di libro:

- 1)** A. Zaffora, F. Di Franco, **R. Macaluso**, M. Santamaria,  $\text{TiO}_2$  in memristors and resistive random access memory devices, *Titanium Dioxide ( $\text{TiO}_2$ ) and its Applications*, Elsevier, 2021, 507 – 526. <https://doi.org/10.1016/B978-0-12-819960-2.00020-1>
- 2)** M. Mosca, **R. Macaluso**, I. Crupi, Hybrid Inorganic-Organic White Light Emitting Diodes, *Polymers for Light-Emitting Devices and Displays*, Wiley and Scrivener Publishing, 2020, 197-262 (ISBN: 978-1-119-65460-5).
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### Abstract e articoli di conferenza:

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