CURRICULUM VITAE

PROF. ANDREA MALIZIA

DEPARTMENT OF BIOMEDICINE AND PREVENTION

UNIVERSITY OF ROME TOR VERGATA

CV INDEX

PERSONAL DATA 3
EDUCATION 3
RESEARCH ACTIVITIES AND PROGRAMS 3
AWARDS AND HONOURS 8
ACADEMIC POSITIONS 8
INTERNATIONAL AND NATIONAL POSITION 9
PROFESSIONAL SOCIETIES 10
CONFERENCES AND WORKSHOP 10

INTERNATIONAL and NATIONAL PATENTS 13

BOOKS PUBLISHED and GUEST EDITOR ACTIVITIES 15

FULL LIST OF PUBLICATION 16

PERSONAL DATA

- *Surname - Forename:* **Malizia Andrea**
- *Address:* **Via di Montpellier 1, 00133 Roma**
- *Office Number:* **+39 0672596202**
- *E-mail:* **malizia@ing.uniroma2.it**

EDUCATION

- *2017.* ***PhD in Industrial Engineering*** *– University of Rome Tor Vergata.*
  PhD thesis: "Optical systems and techniques developed for chemical identification and dust tracking in order to reduce risk factors during extreme events"
  Evaluation: Excellent with honor (Eccellente con lode)

- *2011.* ***Master of Science (Second Level Master Course) in Protection Against CBRNe (Chemical, Biological, Radiological, Nuclear, explosives) events (Advanced Level)*** *– University of Rome Tor Vergata.*
  M.Sc. thesis: "Design of a robot prototype for the remote detection of CBRNe agents"
  Evaluation: 110/110 with honor (110 con lode)

- *2010.* ***PhD in Quantum Electronics and Plasma Physics*** *– University of Rome Tor Vergata.*
  M.Sc. thesis: "Dust mobilization problem in an experimental nuclear reactor. Experiments with STARDUST and simulations to validate a first re-suspension numerical model" Evaluation: Excellent (Eccellente)

- *2005.* ***Master's degree in environmental engineering*** *– University of Rome Tor Vergata.*
  M.D. thesis: "Methods and technologies used for non-conventional events"
  Evaluation: 110/110 with honor (110 con lode)

RESEARCH ACTIVITIES AND PROGRAMS

- *2021-today.* **Principal Investigator for the test support of the radioactivity environmental control system of the Italian FireFighters**
  The Italian Firefighters in 2021 have completed an upgrade of the hardware, software and telecommunication systems regarding their national network for the environmental radioactivity control. I have been appointed Principal Investigator to support them in the test of the software frame. It is the focus of a cooperation agreement between the University of Rome Tor Vergata and the Italian Ministry of Interior.

- *2021-today.* **Responsible for the development of Emergency Scenario**
  I have been appointed by the University of Rome Tor Vergata to work on the development of Emergency Scenario in the aim of the project VERTIgO "Virtual Enhanced Reality for inTeroperable traIning of CBRN military and civilian Operators" granted in the aim of the H2020 program, call on Simulation and virtualization tools and equipment for training, exercises, systems design, development and integration, testing and validation, topic title: Modelling, simulation and virtualization tools and equipment for training, exercises, systems design, development and integration, as well as testing and validation.

- *2021-today.* **Developer of the experimental apparatus**
  I have been appointed by the University of Rome Tor Vergata to work on the development of the experimental apparatus in the aim of the project "SENSORS" granted by Regione Puglia – grant program PIA (Piccole e Medie Imprese). The purpose of the project is developing a prototype of a portable multi component system able to identify the presence of biotic or abiotic substances to verify when these are harmful for the environment and the population.

- *2021-today.* **Responsible for data elaboration activities**
  I have been appointed by the University of Rome Tor Vergata to work on the data elaboration activities for the development of an ultraviolet system for virus identification in the aim of the project "Drone development for CBRNe detection" granted by the Italian Ministry of Instruction, University and Research (MIUR) in the aim of the FISR grant program for specific actions of national strategic relevance, the 2020 edition is dedicated to the COVID-19 pandemic emergency.

- *2019-today.* **Coordinator for the sensor development activities**
  I have been appointed by the University of Rome Tor Vergata to coordinate the activities for the development of a sensor system able to detect environmental radioactivity on a drone in the aim of the project "SARS - CoV-2 - Virus Identification by Remote Ultraviolet System (S-VIRUS)". granted by NATO received under the "Defence Against Terrorism Programme of Work" (DAT PoW-2019)

- *2019-today.* **Coordinator for the sensor development activities**
  I have been appointed by the University of Rome Tor Vergata to coordinate the activities for the development of a sensor system able to detect chemical pollution and contamination on a drone in the aim of the project "Application of miniaturised sensors and sampler to remotely controlled mini Aerial vehicles (payload less than 25kg), a new pathway for the survey of critical areas" granted by OPCW, Project Account No: L/ICA/ICB/218790/19.

- *2019-today.* **Responsible for the development of threats scenario**
  I have been appointed by the University of Rome Tor Vergata to develop threats scenario in the aim of the project "TRANSnational TUNnel operational CBRN risk mitigation" granted by the H2020 program, ISFP2018-AG-CT, ISFP-2018-AG-CT-PROTECT, Type of action: ISFP-AG, ISF-Police Action Grant, Call for proposals on counter-terrorism

- *2019-today.* **Responsible for the development of threats scenario**
  I have been appointed by the University of Rome Tor Vergata to develop threats scenario in the aim of the project "REsilience Support for critical Infrastructures' through Standardized Training on CBRN" granted by the H2020 program, ISFP-2018-AG-CT, ISFP-2018-AG-CT-PROTECT, Type of action: ISFP-AG, ISF-Police Action Grant, Call for proposals on counter-terrorism

- *2019-today.* **Responsible for the development of threats scenario**
  I have been appointed by the University of Rome Tor Vergata to develop threats scenario in the aim of the project "EUProtect - Development of new solutions for the protection of citizens and infrastructures against terrorist threats" granted by the H2020 program, ISFP-2018-AG-CT, ISFP-2018-AG-CT-PROTECT, Type of action: ISFP-AG, ISF-Police Action Grant, Call for proposals on counter-terrorism

- *2017-today.* **Responsible for the development of risk assessment scenario**
  I have been appointed by the University of Rome Tor Vergata to develop risk assessment scenario in the aim of the project "e-Notice - European Network Of CBRN TraIning Centers" granted by the H2020 program, H2020-SEC-2016-2017-1, SEC-21-GM-2016-2017, Coordination and support action, Pan European Networks of practitioners and other actors in the field of security.

- *2016-today.* ***Responsible for the data elaboration system of I-PRO project in Kurdistan***
  I have been appointed by Prof. Leonardo Palombi, University of Rome Tor Vergata, to work on the data elaboration algorithms to analyze the information regarding the epidemiological surveillance in the aim of the IRAQ - KRG-HIS PROJECT granted by the Italian Ministry of Foreign Affairs

- *2009 – today.* ***Responsible for the EUROFUSION activities for the security of the Nuclear Fusion Plants***
  I do work, since 2009, on the security of the Nuclear Fusion Plant (like ITER) analyzing (both experimentally with the STARDUST facility and numerically) the dispersion of radioactive dust in case of accidents like LOVA or LOCA that can provoke environmental contamination and safety problems for the workers and the population.
  At the beginning of 2021 I have been nominated Principal Investigator by EUROFUSION to produce the guidelines for the emergency plan of the future nuclear fusion reactor DEMO in case of human-induced events.
  WORKPACKAGES and TASKS from EUROFUSION: JW8-FT-5.30 (2008); WP 4.7 Fusion safety issues (2010-
  2013); JET C31-C34. EUROFUSION, Task T13-2 (2014-2015); D. SAE-W.B.S-04.05-T001 (2021)

- *2008 – today.* ***Responsible for the signature of many Cooperation Agreements and MoU between the University of Rome Tor Vergata and many National and International Public, Private, Militar and Research/Academic Institution.***
  I have worked hard on the building on an International Network on safety and security, thanks to this work the University of Rome Tor Vergata has obtained, for its CBRNe activities, the status of "NATO Selected" directly from the HQ in Norfolk (Virginia, USA). Also, they are included in the NATO Education and Training

Opportunities Catalogue (ETOC), and they entered into cooperation agreement with the Organization for
the Prohibition of Chemical Weapons (OPCW), the NATO Joint Centre Of Excellence (Czech Republic), the NATO SCHOOL of Oberammergau (Germany). In the 2017 the Master Courses received from the OPCW «The-Hague award» for their effort on the prohibition of the chemical weapons. From 2016 the courses are CEPOL (European Union Agency for Law Enforcement Training) Framework Partner and they deliver official training for European Police Forces. The University of Rome Tor Vergata has signed a cooperation agreement with the Abu Dhabi Police State Department in the aim of Master CBRNe activities last 28 of June 2018. The courses are part of the IAEA (International Atomic Energy Agency) Programme for Education about Radiological and Nuclear Risk. We have official cooperation agreement also with the DLR-German Space Agency; The Lisbon FireFighters Department and many National and International Universities and the Italian Prime Minister Office, Italian Ministry of Defence; Italian Ministry of Interior and the major International and National entities working on safety and security.
You can check the homepage of www.cbrngate.com to consult the full list showed by the logo of each Institution officially engaged and in cooperation with me.

- *2006 – today.* ***Member of the Quantum Electronics and Plasma Physics Research Group***
  My research group is based at the University of Rome Tor Vergata and works mainly on research activities focused on the development of non-invasive techniques to monitor the environmental contamination (indoor and outdoor) provoked by chemical, biological and radiological substances. Main Cooperation: EFDA EURATOM today EUROfusion, (University of Pisa, University of Calabria, University of Catania, University of Roma La Sapienza, Consiglio Nazionale delle Ricerche (CNR), ENEA, INGV, University of Bristol, Universidad Politecnica de Madrid, IRSN, CIEMAT-Centro de Investigationes Energeticas, Medioambientales y Tecnologicas, CCFE-Culham Centre for Fusion Energy, ITER-International Thermonuclear Experimental Reactor). NATO, OPCW, ECDC,CEA, CELIA. National Instruments, Vitrociset spa, Selex SE spa, AKREA spa, BMD spa, CRATI scrl, WL GORE & Associati spa, BMD spa.

- 2009-2017. ***Responsible for the development of the demonstrator***
  I have been appointed by the University of Rome Tor Vergata Responsible for development a stand-off laserbased system to detect and identify CWA (Chemical Warfare Agents) and TIC/TIM (Toxic Industrial Complnents/Toxic Industrial Materials) releases granted by the Italian Ministry of Defence, Piano Nazionale di Ricerca Militare (PNRM) a2008.72.

- 2013-2015. ***Responsible for the analysis of CBRN detection systems***
  I have been appointed by the University of Rome Tor Vergata Responsible for the analysis of CBRN detection systems in the Project "SOS-Alert solution - Cross-border cooperation project for enhanced detection and interception of illicit CBRN materials on the Slovakian-Ukrainian border" granted by *Norwegian Radiation Protection Authority (NRPA) on "Consultancy Services- Nuclear safety, radiation protection and risk assessment".*

- 2013-2015. ***Principal Investigator***
  I have been appointed by the University of Rome Tor Vergata as Principal Investigator for the Project "CBRN Integrated Response- Strengthening CBRN-response in Europe by enhancing on-site cooperation between safety and security organizations: an Italian pilot" granted by the H2020 program - HOME/2012/ISEC/AG/CBRN/4000003799 (2012).

- 2012-2015. ***Responsible for the development of the demonstrator***
  I have been appointed by the University of Rome Tor Vergata as Responsible for the development of a LIDAR and DIAL system to monitor the environmental pollution in human and industrial areas. The research project is SNIFF (Sensor Network Infrastructure For Factors) granted by the program PON (Programma Operativo Nazionale) (PON RC1 [PON01_02422] – Settore Ambiente e Sicurezza).

- 2011-2015. ***Responsible for the development of the demonstrator***
  I have been appointed by CRATI scrl as Responsible for the development of a Laser system to monitor the organic atmospheric pollutants. The research project is MIAO (Monitoraggio Inquinanti Atmosferici Organici) granted by Regione Lazio - Progetti di RSI delle PMI - POR FESR Lazio 2007/2013).

- 2009-2012. ***Responsible for the development of the demonstrator***
  I have been appointed by CRATI scrl as Responsible for the development of a CO_2 Laser system for the reduction of false alarm in the prediction of forest fires. The research project is ALPI (Allerta Precoce Incendi Boschivi) granted by the program POR FESR CALABRIA 2007/2013.

- 2006-2008. ***Responsible for the development of the demonstrator***
  I have been appointed by the University of Rome Tor Vergata as Responsible for the development of a LIDAR system for a fast alarm in case of forest fire. The research project is SAI (Sistema per l'Allerta Precoce in caso di Incendi Boschivi) granted by MIUR (prot. 7979/DSPAR/2002).

AWARDS AND HONOURS

- *2007 - **Award " Best master's degree Thesis "City and Security - Città e Sicurezza "***
  Received by the Italian Ministry of University and Research (On. Fabio Mussi) for my master's degree thesis

- *2011 - **"Premio Sapio Junior" for Italian Research***
  Received by the Italian President of Republic, On. Giorgio Napolitano, for my PhD thesis in Quantum Electronics and Plasma Physics

- *2017 - **OPCW-The Hague Award***
  Award assigned to the CBRNe Master courses Directive Board as best initiative of 2017 for the nonproliferation of chemical weapons

ACADEMIC POSITIONS

- *2020-today. **Assistant Professor in Nuclear Measures and Instrumentation***
  Faculty of Engineering and Faculty of Medicine and Surgery, University of Rome Tor Vergata

- *2020-today. **Didactic Board Member of the PhD in Industrial Engineering***
  Department of Industrial Engineering, University of Rome Tor Vergata

- *2019-today. **Didactic Board Member of the Specialization School of Medical Physics***
  Department of Biomedicine and Prevention, Faculty of Medicine and Surgery, University of Rome Tor Vergata

- *2020-today. **Didactic Board Member of the Specialization School of Hygiene and Epidemiology***
  Department of Biomedicine and Prevention, Faculty of Medicine and Surgery, University of Rome Tor Vergata

- *2014– today. **Didactic Coordinator of the International Master Course in "Protection against CBRNe events***
  – Base Level (CBRNe First Responders)"
  Department of Industrial Engineering and Faculty of Medicine and Surgery, University of Rome Tor Vergata

- *2009– today. **Didactic Coordinator of the International Master Course "Protection against CBRNe events –***
  Advanced Level (CBRNe Advisors of Decision Makers)"
  Department of Industrial Engineering and Faculty of Medicine and Surgery, University of Rome Tor Vergata

- *2008– today.* ***Tutor of many students for thesis of Bachelor and Master Degree thesis and PhD thesis at the Faculties of Engineering and Medicine and Surgery of the University of Rome Tor Vergata.***

- *2016-2019.* ***Senior Researcher in Nuclear Measures and Instrumentation*** Department of Biomedicine and Prevention, University of Rome Tor Vergata

- *2012-2017.* ***Senior Researcher in Experimental Physics***
  Department of Industrial Engineering, University of Rome Tor Vergata
- *2011-2012.* ***Assistant Researcher***
  CRATI s.c.r.l

- *2010-2011.* ***Post-doc fellow in Experimental Physics***
  Department of Mechanical Engineering, University of Rome Tor Vergata

- *2008.* ***Visiting Research Scientist***
  Culham Science Centre, Abingdon, (UK). EURATOM/CCFE Association

- *2005-2006.* ***Research Fellow***
  ISPRO, Research Institute of Italian Civil Protection

INTERNATIONAL AND NATIONAL POSITION

- *2021-today.* Member of the Scientific Committee of the CISINT (Centro Italiano di Strategia ed Intelligence)

- *2020-today.* I have been nominated, by the Italian National Authority, as Italian Point of Contact (POC) for the iNET-EPR Network at IAEA (International Atomic Energy Agency). The iNET-EPR network is the iNET-
  EPR (International Network for Education and Training for Emergency Preparedness and Response)

- *2015-today.* Invited lecturer for the Universities of Yale (USA) and Campus Biomedico, Pisa and Rome La Sapienza (Italy).

- 2014-today. Invited speaker by NATO School (Oberammergau); NATO JCBRNe Centro of Excellence (Czech Republic); Organization for the Prohibition of Chemical Weapons (OPCW – Netherlands); COCIM course (Corso Collaborazione Civile Militare) organized by CASD (Centro Alti Studi Difesa).

PROFESSIONAL SOCIETIES

- *2022-today* – Member of the AIRP society (Associazione Italiana di Radioprotezione)

- *2007-today*. Enrolled to the "Ordine degli Ingegneri della Provincia di Roma", number of enrollment 28076, Section A.

CONFERENCES AND WORKSHOP

- *10-12 December 2020.* ***President of the Organizing Committee***
  "2nd Scientific International Conference on CBRNe SICC Series 2020" – held in a Virtual Reality Platform

- *23 April 2020.* ***President of the Organizing Committee***
  "SICC Series Web-Conference: COVID-19 Emergency management, operative actions and steps to prepare to a new normality" – held online

- *14-16 October 2020.* ***Member of the Organizing and Scientific Committees and Chairman***
  "Third International Emergency Conference" – organized by Abu Dhabi Police GHQ and held in Abu Dhabi (UAE)

- *03-05 October 2020.* ***Speaker***
  "Application of Miniaturized sensors to Unmanned Aerial Vehicles, a new pathway for the survey of critical areas". 5th International Conference on Frontier in Diagnostic Technologies (ICFDT5). INFN Frascati, Italia. 35 Ottobre 2018

- *08 November 2018.* ***President of the Organizing Committee***
  "International Workshop CBRNe 2018 - Countering Radiological and Nuclear Threats"- held at Istituto Superiore Antincendi di Roma (Italy)

- *21-23 February 2018.* ***Speaker***
  "Analyses and Comparisons of the Feature Matching and Lucas Kanade Alghoritms to Elaborate Images of Dust in Order to Measure its Velocity Vectors". 4° Convegno Nazionale Sensori, CNS2018. Catania, Museo Diocesano (Italy)

- *09-10 November 2017.* ***Member of the Organizing Committee***
  " XXV A.I.V.E.L.A Annual meeting"- held at University of Rome Tor Vergata (Italy)

- *23-25 October 2017.* ***Member of the Organizing and Scientific Committees***
  "Second International Emergency Conference" – organized by Abu Dhabi Police GHQ and held in Abu Dhabi (UAE)

- *21-24 May 2017.* ***President of the Organizing Committee***
  "1st Scientific International Conference on CBRNe SICC Series 2020" – held at Istituto Superiore Antincendi di Roma (Italy)

- *25 November 2016.* ***President of the Organizing Committee***
  "International Workshop CBRNe 2016 - Building a strong CBRNe scientific (Chemical-Biological-Radioactive-
  Nuclear-explosive) threats community" - held at Villa Mondragone, Monteporzio (Italy)

- *27-28 October 2016.* ***Speaker***
  "Implementation of optical dust tracking experimental set-up for medical, energetic and agribusiness industry sectors" - XXIV A.I.V.E.L.A Annual meeting, held at University of Brescia (Italy)
- *26-28 October 2016.* ***Speaker***
  "Analysis of Safety Problems in Fusion Reactors" - FUNFI2, 2nd International Conference on Fusion-Fission, held at ENEA (Italy)

- *29 May-03 June 2016.* ***Speaker***
  "A Novel Facility to Investigate Dust Mobilization in Confined Environments with Applications to the Security of the Pharmaceutical Industry" - Materials Science Forum, held at Graz (Austria)

- *20 November 2015.* ***President of the Organizing Committee***
  "International Workshop CBRNe 2015 - "CBRNe: new Technologies, new Strategies, new Approaches to reduce the risks" - held at Villa Mondragone, Monteporzio (Italy)

- *14-17 April 2015.* ***Member of the Organizing Committee***

  "1st EPS (European Physical Society) conference on plasma diagnostics" - held at ENEA (Italy)

- *15-16 December 2014.* ***Member of the Organizing Committee***
  "XXII A.I.V.E.L.A Annual meeting"- held at University of Rome Tor Vergata (Italy)

- *22-26 September 2014.* ***Speaker***
  "Tecniche diagnostiche per applicazioni di safety e security" - 100° Congresso Nazionale della Società Italiana della Fisica, held at University of Pisa (Italy)

- *03-05 July 2014.* ***Invited Speaker***
  "Simulation of 137CS Radioactive Contamination Due to an Accident in a Biomass Plant for Energy Production: The Importance of Decision Support System (DSS) in the Emergency Planning"- 7th International Conference on Environmental and Geological Science and Engineering (EG '14)" - held at Salerno (Italy).

- *21 November 2014.* ***President of the Organizing Committee***
  "International Workshop CBRNe 2014 - "Strategies and solutions to face ongoing global CBRNe (Chemical-

Biological-Radioactive-Nuclear-explosive) threats" - held at University of Rome (Italy)

- *27-28 June 2013.* ***Speaker***
  "Air induced re-suspension in high-vacuum" - International Workshop Re-suspension, held IRSN (Institut de Radioprotection et de Surete Nucleaire) headquarter (France)

- *06-09 November 2012.* ***Speaker***
  "Rapid mapping per l'analisi e la gestione del rischio radiologico generato da sorgenti orfane". 16a Conferenza Nazionale ASITA (Federazione Italiana delle Associazioni Scientifiche per le Informazioni Territoriali ed Ambientali). held Fiera di Vicenza (Italy)

- *21-23 August 2012.* ***Invited Speaker***
  "A portable LIDAR system for the early detection: FfED system - a case study". 10th WSEAS International Conference on Heat Transfer, Thermal Engineering and Environment (HTE '12) - panel: Advances in Heat and Mass Transfer II. Istanbul (Turkey).

- *20-24 September 2010.* ***Speaker***
  "Studio sperimentale e numerico della dinamica dei Loss Of Vacuum Accident nella facility STARDUST"-
  XCVI Congresso Nazionale della Società Italiana della Fisica held at University of Bologna (Italy)

- *28 September -03 October 2009.* ***Speaker***
  Acquisizione di valori puntali di velocità per analizzare l'effetto degli ostacoli (come il divertore) sul moto delle polveri all'interno della facility STARDUST in caso di LOVA (Loss of Vacuum Accident)." XCV Congresso
  Nazionale della S.I.F. (Società Italiana Fisica). held at University of Bari (Italy)

- *22-28 September 2008.* ***Speaker***
  "Misure di mobilizzazione e trasporto nella facility STARDUST"- XCIV Congresso Nazionale della Società
  Italiana della Fisica, held at University of Genova (Italy)

INTERNATIONAL AND NATIONAL PATENTS

1. 2011. **International Patent**

   Pitaro Michele; Bellecci Carlo; Gaudio Pasqualino; MALIZIA Andrea; Serafini Camilla; Richetta Maria.

   Portable device for detecting drugs in breath. WO2011117900 (A1) — 2011-09-29

   Description: A diagnostic device for verifying and also measuring the presence of drugs and/or psychotropic substances in the human body and/or of the metabolites deriving there from, by means of the analysis of the exhalation with the electromagnetic radiation absorption spectrograph technique, comprising: - an ampulla for collecting the sample exhalation, with single-use mouthpieces or similar means; - one electromagnetic radiation emission source; - a system for the captation, analysis and taking over of the electromagnetic absorption spectrum of the sample exhalation, or only of some specific frequencies of the same; - a processing unit for the comparative or differential analysis of the electromagnetic absorption spectrum of the exhalation sample, with the absorption spectra of special reference exhalations, for working out from said analysis the presence of drugs and/or psychotropic substances, and/or of the metabolites deriving there from, in the body of the individual to be tested, and/or the different kinds of substances taken, as well as the amounts thereof and the time passed since their consumption; - updatable memory supports, containing the absorption spectra of said reference exhalations; - output peripherals, arranged for the display of the results of the analysis performed on the sample exhalation, and in case for recording the same onto a relevant support.

2. 2011. **National Patent**

   Sassolini A, D'Amico F, Gaudio P, MALIZIA A, Richetta M, Bellecci C, Lupelli I, Quaranta, R, Mugavero R, Serafini C, Moretti A, Gelfusa M.

   Vernice fotocatalitica. RM2011A000507.

   Descrizione brevetto: La vernice brevettata comprende uno strato di protezione ed uno strato interno destinato ad essere applicato su un desiderato supporto in modo da essere interposto tra detto supporto e detto strato di protezione (detto strato interno) comprendendo un composto polimerico fluorurato detto strato di protezione costituito da una matrice polimerica nella quale è inserito un prodotto fotocatalitico atto a proteggere la vernice da eventuali agenti chimici o biologici.

   Translation

   Photocatalytic paint. RM2011A000507.

   Patent description: This patented paint has a protection layer and an internal layer to be applied on a support to be interposed between this support and the protective layer (called inner layer) comprising a fluorinated polymeric compound (called protective layer) consisting of a polymeric matrix in which a photocatalytic product is placed to protect the paint from any chemical or biological agents.

3. 2010. **National Patent**

   Gaudio P, Bellecci, C, Pitaro M, MALIZIA A, Serafini C, Richetta M (2010).

   Apparecchio diagnostico per il rilevamento di sostanze stupefacenti e/o psicotrope nell'organismo umano, e/o dei metaboliti da esse derivanti. RM2010A000125.

   Descrizione brevetto: L'espirato di un individuo sottoposto ad un controllo è convogliato in un ampolla di raccolta (tramite un boccaglio monouso) a determinate portate e velocità (ed a seguito della separazione meccanica della saliva dall'espirato) ed irradiato con una radiazione elettromagnetica, di radianza spettrale nota, generata da almeno un apposita sorgente di emissione. La suddetta radiazione elettromagnetica viene raccolta e focalizzata (da un sistema ottico) all'interno di una guida di luce connessa ad un apparato spettrografico (un monocromatore avente la funzione di spettrografo ad alta

definizione) in grado di consentire il rilevamento di sostanze stupefacenti e/o psicotrope (e/o metaboliti da esse derivate) presenti nell'esalato campione attraverso l'evidenziazione delle specifiche frequenze spettrali assorbite da dette sostanze quando, allo stato gassoso, sono attraversate da una radiazione elettromagnetica di radianza spettrale nota.

Translation:

Diagnostic device for the detection of narcotic and/or psychotropic substances in the human body, and/or the metabolites deriving from them. *RM2010A000125.*

Patent description: The breath of an individual subjected to a control is conveyed into a collection ampoule (through a disposable mouthpiece) at certain flow rates and speeds (and following the mechanical separation of saliva from the breath) and irradiated with an electromagnetic reduction, with a known spectral radiance, generated by (at least) one suitable emission source. The aforementioned electromagnetic radiation is collected and focused (by an optical system) within an active light guide to a spectrographic apparatus (a monochromator having the high-definition digraph function) capable to detect drugs and/or psychotropic (and/or metabolites derived from them) present in the exhaled sample by highlighting the specific spectral frequencies absorbed by those substances when, in the gaseous state, they are crossed by an electromagnetic radiation of known spectral radiation.

BOOKS PUBLISHED AND GUEST EDITOR ACTIVITIES

- *2020 – today.* ***Guest Editor***
  Special Issue "Measurements, Instrumentation, Sensing and Simulation Techniques for the Detection of Radiation" published on "SENSORS" – MDPI.

- *2020-today.* ***Guest Editor***
  Focus Point on New Technologies for Detection, Protection, Decontamination and Developments of the Decision Support Systems in Case of CBRNe Events" published on "The European Physical Journal (EPJ Plus)" - Springer.

- *2020-today.* ***Guest Editor***
  Special Issue on "Cybersecurity and Artificial Intelligence Towards Critical Infrastructure" published on "International Journal of Cyber Warfare and Terrorism (IJCWT)" – IGI Global

- 2020. ***Guest Editor***
  Book: "2nd Scientific International Conference on CBRNe SICC Series | 2020 | Book of abstract Epidemics, biological threats, and radiological events. The importance of a multidisciplinary approach for International Research Cooperation" published on "CBRNe & Beyond Conventional and non-conventional emergencies: from research, education and training to the management and recovery of normality" – TAB Edizioni *(ISBN: 978-88-9295-091-7)*

- 2016. **Book Author**
  "Elementi di Fisica Base" published by Texmat Editore (ISBN-13: 978-8888748887)
- *2014-today.* ***Editorial Director***
  "CBRNe Book Series" of "Aracne Editore".

- 2018. **Guest Editor**
  Book: COUNTERING RADIOLOGICAL AND NUCLEAR THREATS" - Proceedings Of The 4th International CBRNE Workshop, "IW CBRNE 2018" published on the "CBRNe Book Series" of "Aracne Editore".

- 2017-2018. **Guest Editor**
  "Focus Point on New Technologies Related to Intentional and Accidental Release of CBRNe Agents" published on "The European Physical Journal (EPJ Plus)" - Springer.

- 2017-2018. **Guest Editor**
  Book : "Enhancing CBRNE Safety & Security: Proceedings of the SICC 2017 Conference Science as the first countermeasure for CBRNE and Cyber threats" published by Springer Cham (ISBN: 978-3-319-91790-0)

- 2016-2017. ***Guest Editor***
  Book: "Cyber and Chemical, Biological, Radiological, Nuclear, Explosives Challenges: Threats and Counter Efforts" published on the series "Terrorism, Security and Computation" – Springer Verlag (ISBN 978-3-31962108-1)

- 2014. ***Book Author***
  "Radioactive Dust Re-suspension/Mobilization Inside Tokamaks: Experimental and Numerical Studies of Loss Of Vacuum Accidents inside nuclear fusion plants" published by Lambert Academy Publishing (ISBN-13: 978-3659528255, ISBN-10: 3659528250).

FULL LIST OF PUBLICATION

1. **"A High-Performance Gamma Spectrometer for Unmanned Systems Based on Off-the-Shelf Components"**. Chierici, A., MALIZIA, A., Di Giovanni, D., D'errico, F., & Ciolini, R. (2022).. SENSORS, 22(3), 1078 [10.3390/s22031078]. Dettagli
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Rome (Italy)

Dr. Andrea Malizia
Department of Biomedicine and Prevention
University of Rome Tor Vergata