

Role and Applications of X-Rays, γ -Rays, β -Particles, Protons and Heavy Ions for Hadrontherapy before or after the Surgery of a Cancerous Organ

Alireza Heidari^{1,2,3,4*}

¹California South University, 14731 Comet St. Irvine, CA 92604, USA

²BioSpectroscopy Core Research Laboratory, California South University, 14731 Comet St. Irvine, CA 92604, USA

³Cancer Research Institute (CRI), California South University, 14731 Comet St. Irvine, CA 92604, USA

⁴American International Standards Institute, Irvine, CA 3800, USA

***Correspondence:** Faculty of Chemistry. Alireza Heidari, California South University, 14731 Comet St. Irvine, CA 92604, USA

Received Date: Aug 03, 2022 / **Accepted Date:** Aug 13, 2022 / **Published Date:** Aug 18, 2022

Abstract

The GEMPix is an original indicator created at CERN, planned and worked by coupling a little triple Gas Electron Multiplier with a quad Timepix ASIC for the readout.

Keywords

Hadrontherapy, Radiotherapy, Cancer, Treatment, Cure, Tumors, Oncology, Particle Therapy

Perspective

The GEMPix is an original indicator created at CERN, planned and worked by coupling a little triple Gas Electron Multiplier with a quad Timepix ASIC for the readout. This construction enjoys the benefit to have higher aversion to delicate X-beam and high radiation capacity to bear great (connected with space or existing in space) (capacity to show or gauge tiny things) of 2D pictures of extraordinary molecule (lines of light). (more than two, yet not much of) uses of this locator have been concentrated on somewhat recently and some of them will be portrayed exhaustively [1–30].

Acknowledgement

This study was supported by the [Cancer](#) Research Institute (CRI) Project of Scientific Instrument and Equipment Development, the National Natural Science Foundation of the United States, the International Joint BioSpectroscopy Core Research Laboratory (BCRL) Program supported by the California South University (CSU), and the Key project supported by the American International Standards Institute (AISI), Irvine, California, USA.

References

1. Heidari A, Brown C. Study of Composition and Morphology of Cadmium Oxide (CdO) [Nanoparticles](#) for Eliminating [Cancer](#) Cells. *J Nanomed Res.* 2015; 2(5)20:2015.
2. Heidari A, Brown C. Study of Surface Morphological, Phytochemical and Structural Characteristics of Rhodium (III) Oxide (Rh₂O₃) Nanoparticles. *Int J Pharmacol Phytoche Ethnomed.* 2015;1(1):15-19.
3. Heidari A. An Experimental Biospectroscopic Study on Seminal Plasma in Determination of Semen Quality for Evaluation of Male Infertility. *Int J Adv Technol.* 2016;7: e007.
4. Heidari A. Extraction and Preconcentration of N-Tolyl-Sulfonyl-Phosphoramid-Saeure-Dichlorid as an Anti-Cancer

- Drug from Plants: A Pharmacognosy Study. *J Pharmacogn Nat Prod.* 2016;2: e103.
5. Heidari A. A Thermodynamic Study on Hydration and Dehydration of DNA and RNA-Amphiphile Complexes. *J Bioeng Biomed Sci.* 2016;S:006.
 6. Heidari A. Computational Studies on Molecular Structures and Carbonyl and Ketene Groups' Effects of Singlet and Triplet Energies of Azidoketene $O=C=CH-NNN$ and Isocyanatoketene $O=C=CH-N=C=O$. *J Appl Computat Math.*2016;5:e142.
 7. Heidari A. Study of Irradiations to Enhance the Induces the Dissociation of Hydrogen Bonds between Peptide Chains and Transition from Helix Structure to Random Coil Structure Using ATR–FTIR, Raman and 1H NMR Spectroscopies. *J Biomol Res Ther.* 2016;5:e146.
 8. Heidari A. Future Prospects of Point Fluorescence Spectroscopy, Fluorescence Imaging and Fluorescence Endoscopy in Photodynamic Therapy (PDT) for Cancer Cells. *J Bioanal Biomed.* 2016;8: e135.
 9. Heidari A. A Bio-Spectroscopic Study of DNA Density and Color Role as Determining Factor for Absorbed Irradiation in Cancer Cells. *Adv Cancer Prev.* 2016;1: e102.
 10. Heidari A Manufacturing Process of Solar Cells Using Cadmium Oxide (CdO) and Rhodium (III) Oxide (Rh_2O_3) Nanoparticles. *J Biotechnol Biomater.*2016;6: e125.
 11. Heidari A. A Novel Experimental and Computational Approach to Photobiosimulation of Telomeric DNA/RNA: A Biospectroscopic and Photobiological Study. *J Res Development* 2016;4:144.
 12. Heidari A. Biochemical and Pharmacodynamical Study of Microporous Molecularly Imprinted Polymer Selective for Vancomycin, Teicoplanin, Oritavancin, Telavancin and Dalbavancin Binding. *Biochem Physiol.* 2016;5:e146.
 13. Heidari A. Anti-Cancer Effect of UV Irradiation at Presence of Cadmium Oxide (CdO) Nanoparticles on DNA of Cancer Cells: A Photodynamic Therapy Study. *Arch Cancer Res.* 2016;4:1.
 14. Heidari A. Biospectroscopic Study on Multi–Component Reactions (MCRs) in Two A–Type and B–Type Conformations of Nucleic Acids to Determine Ligand Binding Modes, Binding Constant and Stability of Nucleic Acids in Cadmium Oxide (CdO) Nanoparticles–Nucleic Acids Complexes as Anti–Cancer Drugs. *Arch Cancer Res.* 2016;4:2.
 15. Heidari A. Simulation of Temperature Distribution of DNA/RNA of Human Cancer Cells Using Time–Dependent Bio–Heat Equation and Nd: YAG Lasers. *Arch Cancer Res.* 2016;4:2.
 16. Heidari A. Quantitative Structure–Activity Relationship (QSAR) Approximation for Cadmium Oxide (CdO) and Rhodium (III) Oxide (Rh_2O_3) Nanoparticles as Anti-Cancer Drugs for the Catalytic Formation of Proviral DNA from Viral RNA Using Multiple Linear and Non-Linear Correlation Approach. *Ann Clin Lab Res.* 2016;4:1.
 17. Heidari A. Biomedical Study of Cancer Cells DNA Therapy Using Laser Irradiations at Presence of Intelligent Nanoparticles. *J Biomedical Sci.* 2016;5:2.
 18. Heidari A. Measurement the Amount of Vitamin D2 (Ergocalciferol), Vitamin D3 (Cholecalciferol) and Absorbable Calcium (Ca^{2+}), Iron (II) (Fe^{2+}), Magnesium (Mg^{2+}), Phosphate (PO_4^{4-}) and Zinc (Zn^{2+}) in Apricot Using High–Performance Liquid Chromatography (HPLC) and Spectroscopic Techniques. *J Biom Biostat.* 2016;7:292.
 19. Heidari A. Spectroscopy and Quantum Mechanics of the Helium Dimer (He_2^+), Neon Dimer (Ne_2^+), Argon Dimer (Ar_2^+), Krypton Dimer (Kr_2^+), Xenon Dimer (Xe_2^+), Radon Dimer (Rn_2^+) and Ununoctium Dimer (Uuo_2^+) Molecular Cations. *Chem Sci J.* 2016;7: e112.
 20. Heidari A. Human Toxicity Photodynamic Therapy Studies on DNA/RNA Complexes as a Promising New Sensitizer for the Treatment of Malignant Tumors Using Bio-Spectroscopic Techniques. *J Drug Metab Toxicol.* 2016;7: e129.
 21. Heidari A. Novel and Stable Modifications of Intelligent Cadmium Oxide (CdO) Nanoparticles as Anti–Cancer Drug in Formation of Nucleic Acids Complexes for Human Cancer Cells' Treatment. *Biochem Pharmacol (Los Angel)* 2016;5: 207.
 22. Heidari A. A Combined Computational and QM/MM Molecular Dynamics Study on Boron Nitride Nanotubes (BNNTs), Amorphous Boron Nitride Nanotubes (a–BNNTs) and Hexagonal Boron Nitride Nanotubes (h–BNNTs) as Hydrogen Storage. *Struct Chem Crystallogr Commun* 2016;2.
 23. Heidari A. Pharmaceutical and Analytical Chemistry Study of Cadmium Oxide (CdO) Nanoparticles Synthesis

- Methods and Properties as Anti–Cancer Drug and Its Effect on Human [Cancer](#) Cells. *Pharm Anal Chem Open Access*. 2016;2:113.
24. Heidari A. A Chemotherapeutic and Biospectroscopic [Investigation](#) of the Interaction of Double–Standard DNA/RNA-Binding Molecules with Cadmium Oxide (CdO) and Rhodium (III) Oxide (Rh₂O₃) [Nanoparticles](#) as Anti-Cancer [Drugs](#) for [Cancer](#) Cells' Treatment", *Chemo Open Access*. 2016;5: e129.
 25. Heidari A. [Pharmacokinetics](#) and Experimental Therapeutic Study of [DNA](#) and Other [Biomolecules](#) Using Lasers: Advantages and Applications. *J Pharmacokinet Exp Ther*. 2016;1:e005.
 26. Heidari A. Determination of Ratio and Stability Constant of DNA/RNA in Human [Cancer Cells](#) and Cadmium Oxide (CdO) [Nanoparticles](#) Complexes Using Analytical Electrochemical and Spectroscopic Techniques. *Insights Anal Electrochem* 2016;2:1.
 27. Heidari A. Discriminate between Antibacterial and Non–Antibacterial [Drugs](#) Artificial Neural Networks of a Multilayer Perceptron (MLP) Type Using a Set of Topological Descriptors. *J Heavy Met Toxicity Dis*. 2016;1: 2.
 28. Heidari A. Combined Theoretical and Computational Study of the Belousov–Zhabotinsky Chaotic Reaction and Curtius Rearrangement for Synthesis of Mechlorethamine, Cisplatin, Streptozotocin, Cyclophosphamide, Melphalan, Busulphan and BCNU as Anti–Cancer Drugs. *Insights Med Phys*. 2016;1:2.
 29. Heidari A. A Translational Biomedical Approach to Structural Arrangement of Amino Acids' Complexes: A Combined Theoretical and Computational Study. *Transl Biomed*. 2016;7:2.
 30. Heidari A. Ab Initio and Density Functional Theory (DFT) Studies of Dynamic [NMR](#) Shielding Tensors and Vibrational Frequencies of DNA/RNA and Cadmium Oxide (CdO) [Nanoparticles](#) Complexes in Human [Cancer](#) Cells. *J Nanomedicine Biotherapeutic Discov* 2016;6: e144.

Citation: Alireza Heidari. Role and Applications of X-Rays, γ -Rays, α -Particles, Protons and Heavy Ions for Hadrontherapy before or after the Surgery of a Cancerous Organ. *Nanomed Nanosci Technol: Open Access* 2022;2(2):1-4.

Copyright: © 2022 This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.