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Preface

We would like to present, with great pleasure, the inaugural volume-9, Issue-6, June 2023, of a scholarly journal, *International Journal of Engineering Research & Science*. This journal is part of the AD Publications series *in the field of Engineering, Mathematics, Physics, Chemistry and science Research Development*, and is devoted to the gamut of Engineering and Science issues, from theoretical aspects to application-dependent studies and the validation of emerging technologies.

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Each article in this issue provides an example of a concrete industrial application or a case study of the presented methodology to amplify the impact of the contribution. We are very thankful to everybody within that community who supported the idea of creating a new Research with IJOER. We are certain that this issue will be followed by many others, reporting new developments in the Engineering and Science field. This issue would not have been possible without the great support of the Reviewer, Editorial Board members and also with our Advisory Board Members, and we would like to express our sincere thanks to all of them. We would also like to express our gratitude to the editorial staff of AD Publications, who supported us at every stage of the project. It is our hope that this fine collection of articles will be a valuable resource for *IJOER* readers and will stimulate further research into the vibrant area of Engineering and Science Research.

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Nano Infection: Nature and NG Drugs Delivery Nature Transposon Transfection by Superparamagnetic Iron Oxide Nanoparticles (SPIONs) Vector

CASE REPORT ARTICLE

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Abstract—

The uniqueness about the case: *Infection could be in the form of macro (parasite), micro (bacteria) or nano (nucleic acid) meter size. RNA virus such as SAR-Co2 in this 3 years pandemic era of COVID-19, make everybody had known the different of PCR test and antigen rapid test. This cases, reported transfection of transposons DNA, RNA which not given inflammation reaction, but genomic or epigenomic changing which driven evolution, diversity, disparity or monoculture and proteomic/metabolomic changing in other species or genus. The Natural RNAi vector transfection in tropical rainforest area is occur in daily living, especially at night when the high relative humidity near 100%. Spinel ferrite extracted from salam, kelor, papaya and many others leaves are used for a novel non-vector-mediated gene delivery into mammalian cells, but this mechanism are neglected/reckless in the discussion on blue carbon vs. blue economy G20/B20 summit in November 2022 in Bali, Indonesia. SPIONs is associated with directly healthy and environment living, indirectly help recovery or worsen of food, energy, climate, and economic crisis.*

Important clinical findings: *High prevalence of Down Syndrome, Parkinson Diseases, Bipolar, Autism, LGBTQAI, hypospadia and Congenital Adrenal Hyperplasia (CAH), which is due to CGG repeat, associated parallel with source of sepsis high prevalence in wet-warm climate area: SPIONs.*

Primary diagnosis: *Self diagnostic or in social behavior like street fashion and zebra cross fashion in rainbow flag, and primary care health center. Local leaves rich of ferromagnetic stuff act as non-vector-mediated gene or epigenetic delivery.*

The lessons from the case report are *breaking the taboos of Martin Bell syndrome and Escalante syndrome (CGG repeat), and known the nanomolecular cause in wet condition, which become proteomic and metabolomic neuro-enzyme blocking health laden, tropical rainforest and Nordic area.*

Keywords— Transfection; Metal Nanoparticles; SPIONs; Next Generation Drugs Delivery Systems; microRNAs; Moringa oleifera, Syzygium.

I. INTRODUCTION

Here are the Problem, Interference, Comparison, and Outcome (PICO):

Problem: Natural transfection in wet and warm climate is in high prevalence and give many health laden which the cause is neglected and not be handle in prevention and promotion stage. This iceberg health problem considered successful in the clinical stage and then, the rest New Generation (NG) drug delivery become a market share.

Interference: Knowing the cases and the SPIONs vector of the diseases.

Comparison: Genomic and Epigenomic vs. Proteomic and Metabolomic Aspect in Metallic Nanoparticles Drug Deliveries.

Outcome: The SPIONs vector in wet and warm climate, G20/B20 should be the frontiers of every negotiation and transaction of One-Earth recovery.

The epidemiology, sign and symptoms of transposon transfection in Wet and Warm Climate Area were still neglected and reckless handle. Why this transfection in natural large incubator (wet and warm climate area) at night is unique and may include medical literature references? Mantids,[1,2] one of them, Phyllium westwoodii or pulchrifolium have the form of *salam* leaf (Syzygium polyanthum, bay leaf)[2] and like *jambu biji* leaf (Psidium guajava, guava leaf)[1] reported in tropical rainforest area, are exist by transfection.[2,3] On the other hand, superparamagnetim[3,4] is a form of magnetism which appears in small ferromagnetic nanoparticles, has opened the mystery. In sufficiently small nanoparticles, magnetization can randomly flip direction under the influence of temperature. In the superparamagnetic state, an external magnetic field able to magnetize the nanoparticles, similarly to a paramagnet. Ferromagnetic material undergoes a transition to a paramagnetic state above its Curie temperature. Superparamagnetism, is different from this standard transition since it occurs below the Curie temperature of the material. Curie temperature of Co ferrite 789 K (516 ºC). Cobalt ferrite transfection agents is for drug delivery and diagnostic imaging.[4] Ferromagnetic is a stuff that could be pull strongly by magnet: Cobalt (Co), iron, steel, nickel alnico, alcomax. Superparamagnetic is a form of magnetism which appears in small ferromagnetic or ferromagnetic nanoparticles (the influence of size). The typical time between two flips is called the Neel relaxation time. Superparamagnetic Iron Oxide Nanoparticles (SPIONs) are now the most extensively used functional nanoparticles as antibacterial agents, and for other biomedical applications due to their unique physical, chemical, magnetic and biocompatibility properties, such as MRI diagnostic and cancer/ viral therapy. Unlike ferromagnetic materials, superparamagnetic stuff does not retain any net magnetization once the external field has been removed. Means, they have no magnetic memory.

II. PATIENT INFORMATION

2.1 Alignment justifies

Indigenous studies, Herbal, Modern diagnosis Contrast Agents MRI, Cancer therapy, Antibiotic resistance therapy is associated with the New Generation (NG) drugs delivery and imaging with nanoparticles known as SPIONs.[5,6,7,8,9] The SPIONs is also used for Antibiotic resistance therapy.[10,11] Specific 'naturally' stuff in tropical rainforest area in mantids as transposon transfection.[2] Down syndrome, LGBTQ, Parkinson disease, autism, hypospadia, Congenital Adrenal Hyperplasia, are associated with the RNAi to silence/hypermethylation associated with CGG repeat, are in high prevalence in wet and warm countries.[12,13,14,]

2.2 De-identified patient specific information[15,16]

Decitabine using with too much demethylation associated to bipolar,[15] Hypospadia and CAH as proteomic and metabolomic cases,[13,16] has been reported for a long time ago and rare associated to RNAi. Transfection using SPIONs**,**[17] and SPIONs using for DNA vaccine,[18] has reported as a nurture inorganic vectors of DNA/RNA.

2.3 Primary concerns and symptoms of the patient

Mental and LGBT flags incl. mental and LGBTQAI, whereas the QAI are queer, asexual, intersex[19,20] flags, and taboo/stigma and discrimination with social isolation, exclusion and rejection, are in high prevalence and the cases are received as a fate. These CGG repeat cases with broadly specific diagnosis is in one pedigree.[21] The taboo, social stigma is not only for the family, but also for the whole village or countries, like Martin-Bell-Renpenning, Escalante Syndrome as CGG repeat cases,[10] which

hypospadia alone is thought by Indonesia Science Academic/*Akademi Ilmu Pengetahuan Indonesia* (AIPI) as an ice-berg health laden.[13]

2.3.1 Medical

Down syndrome, Fragile X silencing of FMR1 gene, Parkinsonism, LGBTQ, hypospadia etc. were easy been known by Primary care doctors.[11,12,14]

2.3.2 Family

Parkinson diseases and FXTAS in-one pedigree,[21] or in one environment, [20] are like TBC cases, ever though as ancestor gift, not mycobacterium tuberculosis as a cause. Also lepra, obesity, bipolarism,[15] and others, such as hypospadia and CAH,[13,16] while the environment of hypermethylation is frequently high.[14]

2.4 Psychosocial history incl. relevant genetic information

The CGG repeat, CpG islands, and epigenetic taboo, social justification and early psychological help effort is need by the adolescence. Fashion street festival has been the escape for many villages. Epigenetics study hasn't done in the more than 3 genders, where is now classes too 18 different gender identity in Thailand, South East Asia with wet and warm climate.

2.5 Relevant past interventions and their outcomes

Successful sport, fashion, humoral and reconstruction repair surgery, support by early psycho-social training has been done by many governments, private and village foundation, but they still neglected the cause and epidemiological high prevalence and also negligent as being exist in specific wet and warm area, tropical rain forest.[12]

III. CLINICAL FINDINGS

Proteomic and metabolomic disorders vs. early psychosocial help and vs. urogenital reconstruction surgery, being the clinical findings.

3.1 Alignment justifies

Genetic or epigenetic CYP 21 or cytochrome P450 blocking or polymorphism by CGG repeat,[13] and the findings of CAH in sport gender verification,[16] which nowadays has been diagnose by failure of metabolomics and proteomics of CYP 21 and cyt P450 associated to steroid enzyme in androsterone production.[13] On the other hand, failure of fusion on hypospadia was recorded due to pesticide – not genetic silencer in GMO.[13] The same argumentation on Martin-Bell in Brazil and Escalante syndrome in South America, which has the clinical figures as this neurosteroid destruction, and anatomical face and ear.[13]

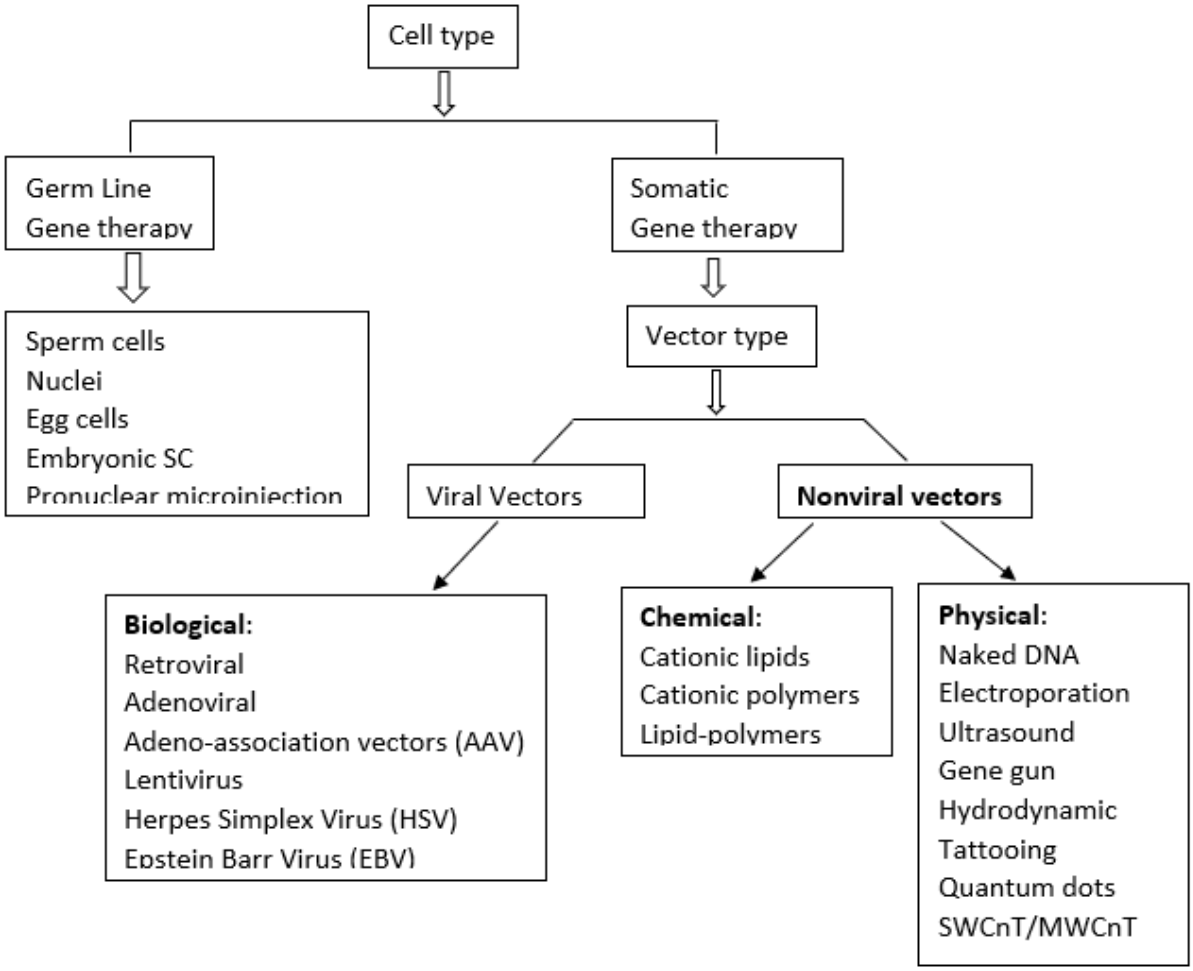
3.2 Describe significant physical examination and clinical findings

Psychosocial more than taboo physical report of hypospadia, CAH, bipolar etc. Somatotype and Waist Hip Ratio could also help.

IV. TIMELINE

4.1 Alignment justifies

Nickel ferrite are frequently utilized as magnetic-based drug delivery and contrast agents in MRI. There are many types doping on this nanoparticle with different size, morphology, and physical features of magnetic nanoparticles. All samples displayed superparamagnetic (SPM) behavior at room temperature, with no or negligible coercivity and retentivity. Historical and current information from this episode of care organized as a timeline (figure 1).



FIGURES 1: Schematic illustration on different vectors-mediated transfection especially by SPIONs's NG cell therapy vs. natural SPIONs in wet and warm climate area for gene therapy manufacturing and vaccine manufacturing (Modified from Bolhassani 2014)

Next Generation (NG) of nanoparticle and Nickel ferrite (NiFe2O4) are potential superparamagnetic nanoparticles act as semiconductor has electromagnetic power. Besides for gene delivery into mammalian cells, cobalt nano ferrite also used in silencing, increasing expression of genes, and editing CRISPR/Cas9 of virus infection therapy.[22] This NG of non-viral vector-mediated gene delivery into mammalian cells.[23]

V. DIAGNOSTIC ASSESSMENT

5.1 Alignment justifies

Orchid mantids and *Salam* mantids, have been reported as a translational RNAi indigenous as an insect fact in tropical rainforest country area such as Indonesia, Thailand, and many others SEA countries for a long-long times.[2]

Diagnostic methods SPIONs (Superparamagnetic Iron Oxide Nanoparticle) for contrast MRI, and waste water treatments aqueous supercapacitors electrodes low-cost sustainable energy storage are recorded. Cu Zn nanoparticles can be used as a contrast agent for MRI thermometry (temperature-sensitive contrast agent. SPIONs coated with a polymer layer are widely used for biomedical applications. Embedding these particles into an agarose gel resulted in significant modification of water proton relaxation times T1, T2 and T2* determine by NMR measurements. Copper-Zn ferrite nanoparticles (NPs) coated with a poly (ethylene glycol) (PEG) layer are synthesized using one-step thermal decomposition method in a polymer matrix.[3]

5.2 Laboratory testing

Epigenetic report of CGG repeat in LGBTQ, Parkinson disease, Autism, Hypospadia, CAH etc.: CpG island, Hormonal, CYP21,[13] cyt P450 mutation,[13] and quantitative CGGr.[12,13,14,15,16]

ARMGs for sepsis or Sensitivity and Resistance test,[2] ever Kanamycin has been used in treatment of tuberculosis and certain sexually transmitted diseases.[24] Multi Drug Resistance (MDR) TB is in high prevalence in India, Thailand, and Indonesia.

Mantids with DNA sequencing and miRNA chain/associated with the leaves.[2]

Concentration of cobalt ferrite[29-34,40-43] or nickel ferrite[26,27,30,44] in *jambu batu* (Psidium guajava) and *kelor* (Moringa oleifera)[34] and *salam* (Syzygium polyanthum), *binahong* (Anredera cordifolia), *papaya* (Carica papaya) leaves as the source of spinel ferrite in translational medicine. Ferrite synthesis using variable part of plants.[25.] Concentration of spinel ferrite in each type of leaves and other part of plants are kept secret from each other manufactures.

5.3 Imaging

Nickel ferrites (NiFe2O4) also known as spinel ferrites (SF),[26] and Structure, Morphological and Electrical/Magnetic Properties of Ni-Mg nano-ferrites from new perspective has been reported.[26.]

Greener methods for the synthesis of various nanostructures with well-organized characteristics and biomedical applicability have demonstrated several advantages, including simplicity, low toxicity, cost-effectiveness, and eco-friendliness. Spinel nickel ferrite (NiFe2O4) [27] also known as Nickel ferrite nanoparticles or Ni ferrite NP. Biosynthesis of spinel nickel ferrite nanowhiskers and their biomedical applications has been reported. [27]

Nano-spinel ferrites means spinel ferrite with nanometer size, which is become superparamagnetic. Biosynthesis effect of Moringa oleifera leaf extract on structural and magnetic properties of Zn doped Ca-Mg nano-spinel ferrites are recorded.[28] This green synthesis nanoparticle has been determine by NMR measurement.[3]

5.4 Survey

Green synthesis Nd substitute Co-Ni change the size, morphology, and physical features of magnetic nanoparticles. Besides the Moringa oleifera leaf extract on structural and magnetic properties of Zn doped Ca-Mg nano-spinel ferrites,[28] also have done from others leaves. Biosynthesis of spinel NiF extracted nanowhiskers and their biomedical applications,[27] also in other part of plants, with other methods, size, structure, and function. There is CoF dope and nano-powder strontium-substituted CoF.[29] Cobalt doping on nickel ferrite nanocrystals enhances the micro-structural and magnetic properties: Shows a correlation between them.[30] Synthesis and magnetic properties of Cobalt ferrite nanoparticles prepared by Wet chemical route,[31] sonochemical synthesis,[32] and characterization of zinc and vanadium cobalt substituted cobalt ferrite nanoparticles synthesized by using the sol-gel combustion.[33]

Cobalt ferrite using *binahong, salam,*[2] *papaya, kelor* [34] for drug delivery, vaccine and therapy, where Moringa oleifera leaf extracted by ethanol 96% to make silver nanoparticles as antioxidant.[34] Nanoparticles Potent Vectors for Vaccine Delivery targeting Cancer and Infectious Diseases, published in Human Vaccines & Immunotherapeutics.[35 :] SPIONs as nanocarriers with various dope and biological properties have been extensively applied for in vitro/in vivo drug and gene delivery.[35] Green synthesis of biocompatible superparamagnetic iron oxide-gold composite nanoparticles for MRI, hyperthermia, and photothermal therapeutic applications report in Materials Chemistry and Physics.[36]

Aluminum-Doped cobalt ferrite as an efficient photocatalyst for abatement if methylene blue degradation. The synthesis of spinel ferrites nanoparticles was performed by a facile sol-gel method, and characterized by FTIR, XRD, SEM, EDS, Nitrogen adsorption/desorption and UV-Visible spectroscopy.[37]

Khoriah et al[38] report the influence of doping ion aluminum to absorbsion curve using FTIR and nanoparticle crystal structure of cobalt ferrite result from Coprecipitation. Many types doping this nanoparticle with different size, morphology, and physical features of magnetic nanoparticles as semiconductor could be seen in Table 1.

TABLE 1
MANY TYPES DOPING MAGNETIC NANOPARTICLES WITH DIFFERENT SIZE, MORPHOLOGY, AND PHYSICAL FEATURES OF SPIONS AS SEMICONDUCTOR

Metal - Ferrite	Particle size (ps)/ λ Size	Reference	Synthesis [23]	Function
Cobalt ferrite	15-48 nm ps NIR-light[L22] (<980nm) 690 nm	Maaz, 2007[31]	Wet chemical route	Gene delivery into mammalian cells, silencing, increasing expression of genes, editing CRISPR/Cas9 of virus infection therapy [22]
Nickel ferrite	<100 nm ps	Alijani, 2021[27]	Doping	Biomedical applications
Zinc ferrite mod	7.3-8.2 nm ps 15-18 nm ps 4.5 nm ps etc.	Zhu 2022[48]	Doping etc.	Nanofibers photocatalytic Degradation of Organic Pollutants
Al ferrite	57.75 → 46.2 nm ps[38]	Abbas, 2020[37]	Doping	Photocatalyst of Methylene Blue Abatement
Ag ferrite	82.9 nm ps	Abdul Karim, 2012[34]	Extract etanol 96%	Antioxidant
	<200 nm ps	Bolhassani, 2014 [35]	Polymeric nanoparticles	Human vaccine targeting Cancer and Infectious diseases
Au ferrite	20 nm ps[50]	Karey, 2022[37]	Cobalt ferrite doped by aqueous plant extract	MRI contrast agent, hyperthermia
Ni-Mg ferrite	84-136.5 nm ps	Mostafa, 2022[26]	Auto Combustion	Electrical/Magnetic properties New perspective
Zn & Vanadium ferrite	~ 45-24 nm ps	Immanipour, 2022[33]	Sol-Gel Auto-Combustion Method	Characterization
Co-Zn ferrite	10-30 nm ps 600 nm wave	Omelyanchick, 2020[41]	Green Synthesis	Antimicrobial Properties
Co-Zn ferrite	+	Lachowicz, 2022[3]	One-Step Preparation in Water Suitable	Contrast agent for MRI Thermometry
Zirconium ferrite	16-26 nm ps	Kavitha 2019[39]	Doping	microstructure, magnetic, dielectric properties
Lithium ferrite	100 increase to 110-120 nm ps Improved light absorbance	Cai, 2022[46]	Doping	enhanced photoelectrochemical water oxidation
Ag-Au ferrite	AgF 20 nm ps, AuF 20 nm ps	Broska 2019[50]	Purchased	Alter miRNA Expression but Do Not Affect DNA Methylation

Besides, several dope has been studied: ZnF and CoF in bacterial culture,[40] CoF as cancer therapy,[42] CoF plant extract,[43] NiF,[44] ZnF for degradation organic pollutant,[48] AgNPs induce a global methylation.[51]. AgNPs and SiNPs in epigenetics. Inorganic Vector,[53] and AuNPs.[58]

In using inorganic NPs for 'epi-drugs': first, the role that epigenetics play in mediating nanotoxicity, and the second is the possibility to overcome the limitations.[52] The Green synthesis SPIONs for industry 4.0 directly do stronger and faster recovery, or worsen the one-earth by the climate, economy, environment, food and energy crisis, due the GMO and hypermethylation side effort.

The currently available nonviral vectors e.g. SPIONs and epigenetic RNAi, that has been used for practical applications, such as circulation lifetime, low environmental responsiveness, and complex preparation procedures.[53] This transducing the nucleic acid into cancer cells, the SPIONs must overcome the trafficking barriers: escape immunity, effectively taken up by cancer cells, and protect and release the therapeutic RNAi.[53]

Five years ago, 2018, mechanisms by which miRNAs are secreted and taken up by cells are not well understood and require further investigation, without SPIONs.[54] In 2020, DNMT3A/AGO4-mediated cytosine methylation of miRNA negatively associated with poor prognosis in in glioblastoma multiforme (GBM).[55]

Then, optical vibration of Nano- and Micro-Metallic Materials for the development of NG virus detection technology has been reported.[58]

Vector and Non-Vector Infection up to Nano-Vector in Association with RNAi Transfection,[60] and Bioelectric Transfection and transposon bullet-High Relative Humidity: Poor conductor and efficiency of the electrostatic field, pledge the nowadays NG therapy and diagnosis based on nucleic acid.[60, 61]

Effect of zirconium doping in the microstructure, magnetic, dielectric properties of cobalt ferrite nanoparticles has been reported.[39] Biogenic Zn doped particles are promising for combined diagnostics and cancer therapy.[40.] Gold SPIONs for MRI, hyperthermia, and photothermal therapeutic applications.[36]

Many studies of variable metal doping ferrite such as Ni, Zr, Zn, Au, Ag, Li etc. with the role of green synthesis are recorded

Green synthesis of Co-Zn Spinel ferrite nanoparticles: Magnetic and Intrinsic Antimicrobial Properties, [41] Exploiting Unique Alignment of cobalt ferrite Nanoparticles, Mild Hyperthermia, and Controlled Intrinsic Cobalt Toxicity for Cancer Therapy.[42]

Control Toxicity for Rx/ Ca.[42.] Photocatalytic and Antibacterial Activity of CoFe2O4 Nanoparticles from Hibiscus rosa-sinensis Plant Extract.[43] Lime peel extract induced NiFE2O4 NPs: Synthesis to applications and oxidative stress mechanism for anticancer, antibiotic activity.[44] A physiologically based pharmacokinetic model to predict the superparamagnetic iron oxide nanoparticles (SPIONs) accumulation in vivo.[45.] Elemental doping which introduces a second or even a third element has been shown by the role of lithium doping on a-Fe2O3 photoanode for enhanced photoelectrochemical water oxidation.[46]

5.5 Diagnostic challenges

All patients with Down Syndrome, LGBTQ, Parkinson disease, Autism, Hypospadia, CAH, Bipolar, Alzheimer, and hypermethylation/ repeat CGG. CpG, and psychosocial flag community are challenges.[12,13,14,15]

5.5.1 Diagnosis (incl. other diagnosis considered) without caused

All failure of proteomic and metabolomic such as Hypospadia and CAH incl. LGBTQAI and more than 2 gender verification should be a challenges diagnostic.

5.5.2 Prognostic characteristics when applicable

Clear Environment without methylation threat with decitabine. Clear Environment without ARMGs in GMO and decrease threat by NG antibiotics (market share).

VI. THERAPEUTIC INTERVENTION

6.1 Alignment justifies

Psychology and Reconstructive urogenital Operation as therapeutic intervention was successful for the patients, but has failed to decrease the prevalence of this epigenetic cases. There is also high in subjects due infectious and autoimmune diseases.

6.2 Types of therapeutic intervention (pharmacologic, surgical, preventive)

Besides early psychological approach, hormonal, pharmacological, surgical, new antibiotic and biomedical application in the market share of these cases and become a prestige for NG drug delivery. Prevention of viral vaccine, and cases associated with pesticide not methylation agent. It is also associated with new pesticide using due to pesticide resistance.

6.3 Administration of therapeutic intervention (dosage, strength, duration)

Dosage symptomatic and control for clinical cases are known widely, but not dose of leaves consist of spinel ferrite as translational medicine.[41] The aspect of Cobalt ferrite as cancer therapy and toxicity.[42]

6.4 Changes in therapeutic interventions with explanation.

No change in therapeutic and prevention of hypermethylation CpG island and CGG repeat health laden, and Cobalt ferrite (CF) dope and nano-powder strontium-substituted CF modeling for heavy metals toxicity for waste water treatment synergistic NG for diagnostic agent and therapeutic which only a market share to the need of energy crises recovery, while hypermethylation cases has been said a fate to indigenous people. Neglected cases plus a share market to the other vaccine and cancer therapy. ZnFe2O4 nanoparticles have been synthesized using grinding, combustion, ceramic, hydrothermal, solvothermal, co-precipitation, sol-gel, and biosynthesis methods. These nanoparticles comprise of metals and their oxides can be produced using alternative biological compounds such as the extracts from plant roots and leaves, fruit peels, seeds, biomass waste, sugar and bacteria.[43] Due to the biodiversity of plants, the preparation of nanoparticles via biosynthesis has a promising future.[45] Since the band gap of ZnFe2O4 was only 1.9 eV, the photogenerated electron-hole pairs quickly recombined, thus decreasing its photocatalytic activity. To improved its photochemical performance, three ways of catalyst modification have been proposed, one of them is elemental doping which introduces a second or even a third element[46] This technique can have a positive effect on its photochemical, electrical, and magnetic properties. The diameter of Al-doped ZnFe2O4 nanofibers decreased significantly.[47]Another doped ZnFe2O4 prepared with carbon-nitrogen, make the energy band position slightly negatively shifted, which expanded the absorption range of visible light, produce a stronger scattering of incident light.[48]

VII. FOLLOW-UP AND OUTCOMES

7.1 Alignment justifies

Down Syndrome, Parkinson disease, Autism, LGBTQAI, Neuro Degenerative Diseases, Hypospadia, CAH, Justify by CGG repeat, caused by neuro-enzyme blocking, mutation, silencing, failure, polymorphism is familial.[12,13,15,49] This is also for Martin-Bell-Renpenning Syndrome and Escalante Syndrome, which is like Parkinsonism FMR1 permutation carriers.[13,49]

7.2 Clinician-and patient-assessed outcomes if available

Decitabine patient prevalence increase, taboo, hypospadia and CAH, mental illness seldom surgery, successful urogenital repairment should be decrease in prevalence.

7.3 Important follow-up diagnostic and other test results

Primary care diagnostic of patients and seldom pedigree and environment, often pesticide cause, not miRNA and its natural and synthetic vectors. In the other hand Silver Gold and Iron Oxide alter miRNA but do not affect DNA methylation in Hep G2 Cells.[50] Silver NPs exposure effect on miRNA and global DNA methylation Endothelial cells.[51]The epigenetics affect in SPIONs has been report,[52]support by the reversion of DNA methylation to miRNA silence via SPIONs.[53] Whereas MiRNA biogenesis, Mechanism of Actions, and Circulation[54] then the methylation which inhibits their functions associated with poor prognosis.[55]

7.4 Intervention adherence and tolerability (how was this assessed?)

Cultural and fashion street activity has been melting the atmosphere of hypermethylation and demethylation.

7.5 Adverse and unanticipated events

SPIONs for water treatment, MRI contrast, biomedical application, and a new quantitative optical biosensor for protein of nanophotonic biosensors for signal output Fourier transform has been lure everyone and again neglected the cause of miRNA nature and nurture of health laden that we have to prevent by separating green and blue activity based on wet n warm vs. dry n warm climate condition, where bioelectric situation successful miRNA bullet.

VIII. DISCUSSION

8.1 Alignment justifies

Spinel ferrite from *kelor* (Moringa oleifera), *salam* (Syzygium polyanthum), *jambu biji* (Psidium guajava), *binahong* (Anredera cordifolia) leaves is a ferromagnetic/diamagnetic/SPIONs in RNAi transfection is a sign by their mantids or cobalt ferrite.[34]

The mystery of semiconductor principle in Moringa oleifera leaves is not a mystic, has opened the physiology how laden sociology and health problem in tropical rainforest and other wet-warm areas, our huge natural incubator laboratory function as non-viral vector. Careful principle is in our hand to guard one-Earth for recover together and not to be a market share of

another topic of NG drug delivery using Cooper-Zn ferrite NPs coated with a poly(ethylene glycol) PEG/EG[3] which give a new side effect such as Acute Kidney Injuries were broadly promote by the ministry of health in Indonesia.

8.2 Strength and limitations in your approach to this case

This is the first study report the association of SPIONs – miRNA methylation epigenetic, not genetic laden problem. The application is not to used recklessly nano biomedical industry as new market without prevention on the proteomic and metabolomic blocking that already happens by the methylation that used for silencing the gene, should be recovered. The limitation in my approach in this case is sensitive to market sharing and should be done by all to fight against power barrier in G20/B20 recover together, recover stronger and faster of food crisis, energy crisis, climate crisis, economy crisis but not epigenetic crisis. High relative humidity in tropical rainforest climate area associated bioelectric transfection to monoculture and nano-vector in association with RNAi transfection should be though as a one-earth problem. It is safe to do the crisis effort in dry-hot and dry-cold area with low relative humidity. Greener methods for the synthesis of various nanostructures with well-organized characteristics and biomedical applicability, have demonstrated several advantages, including simplicity, low toxicity, cost-effectiveness, and eco friendliness. Nickel ferrites nanoparticles with Moringa oleifera were synthesized using a simple and green method.

8.3 Discussion of the relevant medical literature

8.3.1 Optical biosensor for organ-on-chips

Organ-on-chips become a NG drug development.[56]

8.3.2 A new quantitative optical biosensor for protein

The demand for quantitative analytical techniques increases with the growth in proteomics. The new optical biosensor is described based on a dual waveguide interferometric technique. The tech has been verified using standard protein systems and by comparing the data with published work using X-ray Crystallography and neutron reflection techniques. Typical film thicknesses for streptavidin layers were in the range 5.5-6.5 nm compare with the short axis crystal structure 4.8-5.6 nm. The precision of the measurements taken was of the order of 40 pm with respect to absorbed adlayer thickness.[57]

8.3.3 Localized SPR for bacterial and virus detection

By automating the PCR system to detect the extracted viral RNA, in nanoscale virus sensing systems. Optical vibration NG virus detection advances and application at nanophotonic resonance with the using of a nano solid material such as a metal with a free charge, the surface charge is called surface plasmon resonance (SPR).[58]

8.3.4 SPRi advances and applications at nanophotonic biosensor[59]

Nanophotonic devices, which control light in subwavelength volumes and enhance light-matter interactions, have opened up exciting prospects for biosensing. Using SPR in metals and added functionalities by leveraging nanostructures and on-chip and optoelectronic integration increase the impact in term of improving health and safety, food safety, environmental monitoring, security, pharmaceutics and forensics. Harnessing Artificial Intelligent in the SPR imaging are essential.

8.4 The rationale for your conclusions

Semiconductor $CoFe_2O_4$ extracted from many leaves from tropical rainforest act as a nano-carrier transposon bullet in transfection process in wet-warm tropical rainforest countries. From fruit peels also act as nano-carrier transposon bullet. Green synthesis Method of cobalt ferrite doped to Silver NPs exposure on miRNA and global DNA methylation in Endothelial cells.[51] Ultrasonic irradiation of nano-spinel ferrite with and without Moringa oleifera, all samples displayed superparamagnetic (SPM) behavior at room temperature, with no or negligible coercivity and retentivity.[28]

8.5 The primary "taken-away" lessons from this case report (without references) in a one paragraph conclusion

Natural RNAi vector transfection in tropical rainforest area with wet-warm climate area, is occur in daily living, especially at night when high relative humidity is high, near 100%. This nano-vector transfection is parallel with high prevalence of neuro-enzyme proteomic and metabolic polymorphism, blocking, failure.[13] This nano-carrier of nanoparticles have electromagnetic power which act as semiconductor. The neuro-enzyme polymorphism/ mutations are like tuberculosis ever, it is cause by nature (faith), not nurture. Spinel ferrite extracted from leaves, are used as novel non-viral vector-mediated gene and epigenetic delivery into mammalian cells, but this mechanism is neglected/ reckless in the discussion on blue carbon vs. blue economy

G20/B20 summit November 2022 in one-earth recover together, recover stronger. SPIONs as nanocarriers with various dope and biological properties have been extensively applied for in vitro/in vivo drug and gene delivery.

IX. PATIENT PERSPECTIVE

9.1 Alignment justify

Sepsis as the cause of ARMGs,[24] Gentamycin resistance therapy[11] has been reported as the association of SPIONs-ARMGs[10] should be prevented and promoted VS. market share of NG antibiotic in this more than 2 decades.

LGBTQAI has been reported in high prevalence and simple find by primary care doctors and community.

Cancer diagnostic and Therapy using NG drug delivery or promotion, and prevention has been heard by the patients from social media, which is also the hope of stem cell therapy.

9.2 The patient should share their perspective on the treatment(s) they received

1. Hormonal therapy for hypospadia and CAH
2. Mental psychology early help for LGBTQAI is cover by villager stigma
3. Urogenital successful reconstructive operation vs. the cause prevention and promotion of demethylation therapy
4. SPIONs for fighting Antibiotic Resistance/sepsis and new antibiotics market share vs. not using ARMGs in GMO seed production
5. SPIONs for non-viral vector / inorganic vectors of NG drug and vaccine delivery incl. immune and cancer therapy

9.3 The decision maker and environment doer should not omit

1. High Relative Humidity nature transposon-SPIONs in tropical rain forest incl. BRICS area
2. The using of ARMGs for GMO due to drop the cost of separation successful seed vs. the inferior one, but only in dry-cold and dry-hot climate area due to Low Relative Humidity

9.4 The Parliament Law maker should not reckless about:

1. Industry 4.0 without Society 5.0
2. SPIONs nature and nurture
3. Wet and warm vs. dry and cold/ dry and hot climate associated hypermethylation cases
4. PEG toxicity vs. water extracted green SPIONs synthesis
5. Be aware on crime of omittance, crime of allowance, crime of omission and crime of acceptance.
6. Crime, hate crime and LGBTQAI social harassment as the effect of nature and nurture SPIONs

Discretion is the better part of valor for the policy maker.

Semiconductor cobalt ferrite and nickel ferrite mostly extracted from many leaves,[26, 27, 30, 44] from fruit peels, act as transposon bullet is a rational case.[60,61]

X. COMPETING INTEREST

Nothing but One-Earth

XI. ACKNOWLEDGMENTS

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which has electromagnetic power function as non-viral vector transposon transfection. Thank to the pandemic COVID-19, who has opened the non-viral nano-carrier or nano-vector RNAi transfection mechanism for diagnostic, vaccine, and therapy.

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REFERENCES

[1] Getty Images. Mantids, Guava Leaf-mantis. https://www.gettyimages.co.uk/detail/photo/leaf-mantis-bali-royalth-free-image/985542408

[2] Peni Samsuria Mutalib. Camouflage in Tropical Rained Forest: indigenous RNAi. 3rd RNAi World Congress, 2009/05/14. Event Proceedings. Publisher Science Direct, Thermo Scientific.

[3] Lachowicz D, Stroud J, Hankiewicz JH, Gassen R, Kmita A, Stepien J, et al. One-Step Preparation of highly stable Cooper-Zinc Ferrite Nanoparticles in Water Suitable for MRI Thermometry; Chem of Mater 2022; 34(9): 2c00079. https://doi.org/10.1021/acs.chemmater.2c00079

[4] Mohammadi Z, Attaran N, Sazgarnia A, Shaegh SAM, Montazerabadi A. Superparamagnetic cobalt ferrite as T2 contrast agent in MRI. IET Nanobiotechnol 2020; 14(5): 396-404. https://doi.org/10.1049/iet-nbt.2019.0210

[5] Wahajuddin, et al. Superparamagnetic iron oxide nanoparticles: magnetic nanoplatforms as drug carriers. Int J Nanomed 2012: PMID: 22848170

[6] Rahmani R, Gharanfoli M, Gholamin M, Darroudi M, Chamani J, Sadri K, Hashemzadeh HR. Plant-mediated synthesis of superparamagnetic iron oxide nanoparticles (SPIONs) using aloe vera and flaxseed extracts and evaluation of their cellular toxicities. Ceram Int 2019; 46(3). https://doi.org/10.1016/j.ceramint.2019.10.005

[7] Neuwelt A, Sidhu N, Hu C-A A, Mlady G, Eberhardt SC, Sillerud LO. Iron-Based Superparamagnetic Nanoparticle Contrast Agents for MRI of infection and inflammation. AJR Am J Roentgenol 2015; 204(3): W302-W313. https://doi.org/10.2214/AJR.14.12733

[8] Wei H, Bruns OT, Kaul MG, Hansen EC, Barch M, Wisniowska A, et al. Exceedingly small iron oxide nanoparticles as positive MRI contrast agents. PNAS 2017;114(9):2325-2330. https://doi.org/10.1073/pnas.1620145114

[9] Vangijzegem TV, Lecomte V, Ternad I, van Leuven L, Muller RN, Stnicki D, Laurent S. Superparamagnetic Iron Oxide Nanoparticles (SPIONs): Froom Fundamentals to State-of-the-Art Innovative Applications for Cancer Therapy. Pharm 2023:15(1): 236. https://doi.org/10.3390/pharmaceutics15010236

[10] Tylor EN, Kummer KM, Durmus NG, Leuba K, Tarquinio KM, Webster TJ. Superparamagnetic iron oxide nanoparticles (SPION) for the treatment of antibiotic-resistant biofilms. Small 2012; 8(19:3016-27. https://doi.org/10.1002/smll.201200575

[11] Subbiahdoss G, Sharifi S, Grijpma DW, Laurent S, van der Mei HC, Mahmoudi M, Busscher HJ. Magnetic targeting of surface-modified superparamagnetic iron oxide nanoparticles yields antibacterial efficacy against biofilms of gentamycin-resistance staphylococci. Acta Biomater 2012;8(6):2047-55. https://doi.org/10.1016/j.actbio.2012.03.002

[12] Mutalib PKS, Murtani BY, Dardjat MT, Ibrahim AS, Hartati M. LGBTQ: The molecular mechanism and its role in elucidating proportional for a better management. IJOEAR 2017:3(9):23-29. https://dx.doi.org/10.25125/agriculture-journal-IJOEAR-SEP-2017-6

[13] Mutalib PKS, Samsuria IK. Once again CGG repeat patients, hypospadia: a systematic review. IJOEAR 2022:8(1):01-08. https://dx.doi.org/10.5281/zenodo.5920375

[14] Samsuria PK, Samsuria IK. Methylation related to benefit and harm in RNAi application: an epigenetic quasi systematic review. JPH RECODE 2020;3(2):119-26. https://dx.doi.org/10.20473/jphrecode.v3i2.15010

[15] Samsuria PKS, Samsuria IK, Samsuria WD. Decitabine self monitoring in unstable methylation of DNMT patients: a quasi systematic review. IJOEAR 2019; 5(9):29-35.

[16] Mutalib PKS. Test Kewanitaan (Gender Verification) Dexa Media, majalah Kedokteran dan Farmasi 2002; 15(2): 70-71.

[17] Chen C-B, Chen J-Y, Lee W-C. Fast transfection of mammalian cells using superparamagnetic nanoparticles under strong magnetic field. J Nanosci Nanotechnol 2009; 9(4): 2651-9. https://doi.org/10.1166/jnn.2009.449 PMID: 19438016

[18] Al-Deen FN, Selomulya C, Ma C, Coppel RL. Superparamagnetic nanoparticle delivery of DNA vaccine. Methods Mol Biol 2014; 1143:181-94. Doi: 10.1007/978-1-4939-0410-5_12.

[19] Mind.org.ug. Information about mental health support for people who are LGBTQIA https://www.mind.org.uk/information-support/tips-for-everyday-living/lgbtqia-mental-health/about-lgbtqia-mental-health/

[20] Hamzelou J. First step to reducing hate crimes? Enshrine equality in law. New Scientist 21 June 2016. The Orlando shooting in a gay club was the latest and most violent hate crime against the LGBT community in the US. Better laws might reduce https://www.newscientist.com/article/2094618first.step.to.reduceing.hate.crimes.enshrine.equality-in-law

[21] Robertson EE, Hall DA, Pal G, Ouyang B, Liu Y, Joyce JM, Berry-Kravis E, O'Keefe JA. Tremorography in fragile X-associated tremor/ataxia syndrome, Parkinson's disease and essential tremor. Clin Parkinsonism & Relat Disord 2020; 3:100040. https://doi.org/10.1016/j.prdoa.2020.100040

[22] Lin Y, Wagner E, Lachelt U. Non-viral delivery of the CRISPR/Cas system: DNA versus RNA versus RNP. Biomater Sci 2022: 10(5): 1166-92. https://doi.org/10.1039/D1BM01658J: Au, Silica, Zn

[23] Das J, Han JW, Choi Y-J, Song H, Cho S-G, Park C, Seo HG. & Kim J-H. Cationic Lipid-nanoceria hybrids, a novel nonviral vector-mediated gene delivery: investigation of the cellular uptake mechanism. Sci Rep 2016; 6(1):29197. https://doi.org/10.1038/srep29197

[24] HK gov. Genetically Modified Food-Antibiotic Marker Gene. Centre for Food Safety, HK government 2009. https://www.cfs.gov.hk/english/multimedia/multimedia_pub/multimedia_pub_fsf_37_02.html

[25] Kalia S. Kumar A, Munjal N and Prasad N. Synthesis of ferrites using various parts of plants: A mini review. J Phys Conf Series 2020; 1964 0320032021. https://doi.org/101088/1742-6596/1964/3/032003

[26] Mostafa M, Saleh O, Henaish AM, El-Kareem SAA, Ghazy R, Hemeda OM, et al. Structure, Morphology and Electrical/Magnetic Properties of Ni-Mg Nano-Ferrites from a New Perspective. Nanomater (Basel) 2022; 12(7):1045. https://doi.org/10.3390/nano12071045 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9000882/

[27] Alijani HQ, Iravani S, Pourseyedi SH, Barani M And Khatomi M. Biosynthesis of spinel nickel ferrite nanowhiskers and their biomedical applications. Sci Rep 2021: 11(1): 17431. https://doi.org/10.1038/s41598-021-96918-z

[28] Almessiere MA, Slimani Y, Auwal S, Shirsath SE, Gondal MA, Sertkol M, Baykal. Biosynthesis effect of Moringa oleifera leaf extract on structural and magnetic properties of Zn doped Ca-Mg nano-spinel ferrites. Arab J of Chem 2021; 14(8):10361. https://doi.org/10.1016/j.arabjc.2021.103261

[29] Purnama: CoF dope Str. Kumar R, Kar M. Lattice strain induced magnetism in substituted nanocrystalline cobalt ferrite. J of Magn and Magnetic Mater 2016; 416; 335-41. https://doi.org/10.1016/j.jmmm.2016.05.035

[30] Debnath S, Das R. Cobalt doping on nickel ferrite nanocrystals enhances the micro-structural and magnetic properties: Shows a correlation between them. J of Alloy and Compd 2021; 852: 156884. https://doi.org/10.1016/j.jallcom.2020.156884

[31] Maaz K, Mumtaz A, Hasanian SK, Ceylan A. Synthesis and magnetic properties of Cobalt Ferrite (CoFe2O4) nanoparticles prepared by wet chemical route. J Magn and Magnetic Mater 2007;308(2):289-95. https://doi.org/10.1016/j.jmmm.2006.06.003

[32] Goswani PP, Choudhury HA, Chakma S, Moholkar VS. Sonochemical Synthesis of Cobalt Ferrite Nanoparticles. Int J of Chem Eng 2013; 934234. https://doi.org/10.1155/2013/934234

[33] Imanipour P, Hasani S, Seifoddini A, Nabialek M. Synthesis and Characterization of Zinc and Vanadium Co-Substituted CoFe2O4 Nanoparticles Synthesized by Using the Sol-Gel Auto-Combustion Method. Nanomater 2022; 12(5):752. https://doi.org/10.3390/nano12050752

[34] Abdul Karim F, Tungadi R, Thomas NA. Biosintesis nanopartikel Perak ekstrak etanol 96% daun kelor (Moringa oleifera) dan uji aktivitasnya sebagai antioksidan. Indones J of Pharm Educ 2022; 2(1):32-41. https://doi.org/10.37311/ijpe.v2i1.11725

[35] Bolhassani A, Javanzad S, Saleh T, Hashemi M, Aghasadeghi MR, Sadat SM. Polymeric Nanoparticles: Potent Vectors for Vaccine Delivery Targeting Cancer And Infectious Diseases. Hum Vaccines & Immunother 2014;10(2): 321-332. https://doi.org/10.4161/hv.26796

[36] Kharey P, Goel M, Husain Z, Gupta R, Sharma D, Palani MIA, Gupta S. Green synthesis of biocompatible superparamagnetic iron oxide-gold composite nanoparticles for magnetic resonance imaging, hyperthermia, and photothermal therapeutic applications. Mater Chem and Phys 2022; 9:126859. https://doi.org/10.1016/j.matchemphys.2022.126859

[37] Abbas 2020. Abbas N, Rubab N, Sadiq N, Manzoor S, Khan MI, Garcia JF, Aragao IB, Tariq M, Akhtar Z, Yasmin G. methylene blue abatement. Aluminium Doped Cobalt Ferrite as an Efficient Photocatalyst for the Abatement of Methylene Blue. J Water 2020: 12(8):2285. https://doi.org/10.3390/w12082285

[38] Khoriah A, Utari U, Purnama B. Pengaruh Doping Ion Aluminium pad Kurva Serapan FTIR dan Struktur Kristal Nanopartikel Kobalt Ferit Hasil Kopresipitasi. Jurnal Fisika dan Aplikasinya 2017; 13(2): 56-58.

[39] Kavitha S, Kurian M. Effect of zirconium doping in the microstructure, magnetic, dielectric properties of cobalt ferrite nanoparticles. J of Alloy and Comp 2019; 799(9):147-159. https://doi.org/10.1016/j.jallcom.2019.05.183

[40] Khan A, Al-Quaderi GD, Bhuiyan MA, Maria KH, Choudhury S, Hossain KMA, Saha DK, Akhter S. Study of the Magnetic Properties of Zn doped Cobalt ferrite ($CoZn_xFe_{2-x}O_4$). Biointerface Res in Appl Chem 2020; 10(3): 5665-9. https://doi.org/10.33263/briac103.665669

[41] Omelyanchik A, Levada K, PshenichnikovS, Abdolrahim M, Baricic M, Kapitunova A, et al. Green Synthesis of Co-Zn Spinel Ferrite Nanoparticles: Magnetic and Intrinsic Antimicrobial Properties. Mater (Basel) 2020;13(21):5014. https://doi.org/10.3390/ma13215014

[42] Balakrishnam PB, Silvestri N, Fernandez-Cabada T, Marinano F, Fernandes S, Fiorito S et al. Esploiting Unique Alignment of Cobalt Ferrite Nanoparticles, Mild Hyperthermia, and Controlled Intrinsic Cobalt Toxicity for Cancer Therapy. Adv Mater 2020; 32(45): 2003712. https://doi.org/10.1002/adma.202003712

[43] Velayutham L, Parvathiraja C, Anitha DC, Mahalakshmi K, Jenila M, Alasmary FA, et al. Mater (Basel) 2020; 13(21):5014. Photocatalytic and Antibacterial Activity of CoFe2O4 Nanoparitcles from Hibiscus rosa-sinensis Plant Extract. Nanomater 2022; 12:3668. https://doi.org/10.3390/nano12203668

[44] Malik AR, Aziz MH, Atif M, Irshad MS, Ullah H, Gia TN et al. Lime peel extract induced NiFE2O4 NPs: Synthesis to applications and oxidative stress mechanism for anticancer, antibiotic activity. J of Saudi Chem Soc 2022;26(2): 101422. https://doi.org/10.1016/j.jscs.2022.101422

[45] Siccardi M, A physiologically based pharmacokinetic model to predict the superparamagnetic iron oxide nanoparticles (SPIONs) accumulation in vivo. The European Summit for Clinical Nanomedicine and Targeted Medicine. The Translation to Knowledge BasedNanomedicine. CLINAM-8th Conference and Exhibition, June 28-July 1, 2015-Basel.

[46] Cai J, Role of lithium doping on a-Fe2O3 photoanode for enhanced photoelectrochemical water oxidation. J of Alloy and Comp 2022; 915:165349. https://doi.org/10.1016/j.jallcom.2022.165349

[47] Zhu J, Zhu Y, Chen Z, Wu S, Fang X, and Yao Y. Progress in the Preparation and Modification of Zinc Ferrite Used for the photocatalytic Degradation of Organic Pollutants. Int J Environ Res Pub Health 2022; 19(17): 10710. https://doi.org/10.3390/ijerph191710710

[48] Zhu S, LiH, Li Y, Huang Z, and Chu L. Exploring visible light for carbon-nitrogen and carbon-oxygen bond formation via nickel catalysis. J Org Chem Front 2023;10:548-69. https://doi.orf/10.1039/D2QO01700H

[49] Hall DA, Howard K, Hagerman R, and Leehey MA. Parkinsonism in FMR1 premutation carriers may be indistinguishable from Parkinson disease. Parkinsonism Relat Disord 2009; 15(2):156-59. https://doi.org/10.1016/j.parkreldis.2008.04.037

[50] Broska K, Gradzka I, Kruszewski M. Silver, Gold, and Iron Oxide Nanoparticles Alter miRNA Expression but Do Not Affect DNA Methylation in HepG2 Cells. Mater (Basel) 2019; 12(7): 1038. https://doi.org/10.3390/ma12071038

[51] Gonzalez-Palomo AK, Saldana-Villanueva K, Cortes-Garcia JD, Macias JCF, Mendez-Rodriguez KB, Perez-Maldonado IN. Effect of Silver Nanoparticles (AgNPs) Exposure on microRNA Expression and Global DNA Methylation in Endothelial Cells EA.hy926. Environ Toxic Pharm 2020;81(91). https://doi.org/10.1016/j.etap.2020.103543

[52] Musolino E, Pagiatakis C, Serio S, Borgese M, Gamberoni F, Gornati R, Bernardini G, and Papait R. The Yin and Yang of epigenetics in the field of nanoparticles. Nanoscale Adv 2022;4:979-994. https://doi.org/10.1039/D1NA00682G

[53] Liang L, Cen H, Huang J, Qin A, Xu W, Wang S et al. The reversion of DNA methylation induced miRNA silence via biomimetric nanoparticles-mediated gene delivery for efficient lung adenocarcinoma therapy. Mol Cancer 2022; 21: 186. https://doi.org/10.1186/s12943-022-01651-4

[54] O'Brien J, Hayder H, Zayed Y, Peng C. Overview of MicroRNA Biogenesis, Mechanisms of Actions, and Circulation. Front Endocrinol 2018; 9:402. https://doi.org/10.3389/fendo.2018.00402

[55] Cheray 2020. Cheray M, Etcheverry A, Jacgues C, Pacaud R, Bougras-Cartron G, Aubry M et al. Cytosine methylation of mature microRNAs inhibits their functions and is associated with poor prognosis in glioblastoma multiforme. Mol Cancer 2020;19(1):36. https://doi.org/10.1186/s12943-020-01155-z

[56] Ma C, Peng Y, Li H, and Chen W. Organ-on-a-Chip: A new paradigm for drug development. Trends Pharmacol Sci 2021;42(2):119-33. https://doi.org/10.1016/j.tips.2020.11.009

[57] Cross GH, Reeves AA. Brand S, Popplewell JF, Peel LL, Swann MJ, Freeman NJ. A new quantitative optical biosensor for protein characterization. Biosens and Bioelectronics 2003;19(4):282-90. https://doi.org/10.1016/S0956-5663(03)00203-3

[58] Takemura K. Surface Plasmon Resonance (SPR)- and Localized SPR (LSPR)-Based Virus Sensing Systems: Optical Vibration of Nano- and Micro-Metallic Materials for the Development of Next-Generation Virus Detection Technology. Biosens (Basel) 2021;11(8): 250. https://doi.org/10.3390/bios11080250

[59] Altug H, Oh S-H, Maier SA, Homola J. Advances and applications of nanophotonic biosensors. Nat Nanotechnol 2022;17(1):5-16. https://doi.org/10.1038/s41565-021-01045-5

[60] Samsuria PK. Vector and Non-Vector Infection up to Nano-Vector in Association with RNAi Transfection. IJOEAR 2022;8(10):38-42. https://dx.doi.org/10.5281/zenodo.7295942

[61] Samsuria PK. Bioelectric Transfection and transposon bullet-High Relative Humidity: Poor conductor and efficiency of the electrostatic field. International Multispeciality Journal of Health 2022;8(11):1-5. https://dx.doi.org/10.5281/zenodo.7384551

Ultrasonic Glass for Blind and Smart Stick using IOT

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Abstract— *Smart blind stick using Arduino, aimed at improving the mobility and safety of individuals with visual impairments. The smart blind stick incorporates ultrasonic sensors to detect obstacles and provides haptic feedback through a vibrating motor. This offers an affordable and accessible solution to assist visually impaired individuals in navigating their surroundings with increased confidence and independence. Visual impairments significantly impact an individual's ability to navigate their surroundings, resulting in challenges and limitations in their daily lives. Assistive technologies play a crucial role in empowering individuals with visual impairments by providing them with tools to enhance their mobility and independence. One such technology is the development of ultrasonic glasses designed specifically for the blind. Visual impairments encompass a wide range of conditions, from partial sight to complete blindness. These conditions affect millions of individuals worldwide and pose significant challenges in terms of mobility, object detection, and spatial awareness. Traditional mobility aids, such as white canes and guide dogs, offer assistance but have limitations in providing real-time information about obstacles and environmental surroundings.*

Keywords— Smart blind stick, Visual impairments, ultrasonic sensors, IOT.

I. INTRODUCTION

The smart blind stick using Arduino is an innovative assistive technology designed to enhance the mobility and safety of individuals with visual impairments. Visual impairments pose significant challenges to individuals in navigating their surroundings, leading to potential accidents and limited independence. The smart blind stick aims to address these challenges by integrating ultrasonic sensors and haptic feedback mechanisms into a traditional white cane or stick. Visual impairments affect millions of people worldwide, limiting their ability to move freely and safely in their environment. Traditional white canes are commonly used by individuals with visual impairments as a means of detecting obstacles. However, these canes rely solely on the user's physical contact with objects, which may not be sufficient to prevent accidents or provide timely information about upcoming obstacles. Visually impaired people often need assistance in day to day life for navigating through their residence and outside. Having a human assistance is not possible all the time and so a solution to this problem is being researched from a long time. Well here we develop a smart solution to this problem using ultrasonic glasses.

Also the glasses are fitted with vibrator rather than a buzzer as constant buzzing sound would be more of a nuisance rather than help. The Smart Glasses would offer the following Advantages:

- **Ultrasonic Based Obstacle Detection**
- **Sound Alert on Glasses**
- **Light Weight System**

The system makes use of 2 x Ultrasonic sensors, an atmega microcontroller, battery, transparent glasses, basic electronics components and a PCB to develop this system. The glasses can now detect obstacles and transmit this to the blind person. The ultrasonic sensors are mounted on glasses on 2 side to act as eyes. The sensors constantly transmit and receive ultrasonic waves to receive obstacle data. The Microcontroller is constantly getting this data from the sensors.

II. OBJECTIVES

The primary objective of this project is to develop a smart blind stick using Arduino that can provide real-time obstacle detection and haptic feedback to users. By integrating ultrasonic sensors, the blind stick can detect objects in the surrounding environment and alert the user through vibrations, enabling them to navigate with greater confidence and safety.

The primary objective of this project is to design and implement ultrasonic glasses for the blind, which utilize ultrasonic sensor technology to detect obstacles and provide auditory or haptic feedback.

III. SYSTEM REQUIREMENTS

3.1 Hardware Components

a) **Arduino Board:** Select a suitable Arduino board, such as Arduino Uno or Arduino Nano, which provides the necessary computational power and input/output capabilities.

b) **Ultrasonic Sensor:** Choose an ultrasonic sensor module capable of measuring distances accurately. The sensor should typically have four pins: VCC, GND, TRIG, and ECHO.

c) **Vibrating Motor or Buzzer:** A vibrating motor or buzzer will be used to provide haptic feedback to the user. Select a motor or buzzer that can be easily controlled by the Arduino.

d) **White Cane or Stick:** A traditional white cane or stick serves as the physical base onto which the hardware components will be mounted. Ensure it is sturdy and suitable for attaching the sensors and actuators securely.

3.2 Circuit Design and Connection Blind Stick:

Once the hardware components are selected, the circuit needs to be designed and the connections established:

a) Connect the VCC pin of the ultrasonic sensor to the 5V pin of the Arduino board, and connect the GND pin of the sensor to the GND pin of the Arduino.

b) Connect the TRIG pin of the ultrasonic sensor to a digital pin of the Arduino (e.g., pin 7), and connect the ECHO pin to another digital pin (e.g., pin 8).

c) Connect the positive (red) wire of the vibrating motor or buzzer to a digital pin of the Arduino (e.g., pin 9), and connect the negative (black) wire to the GND pin of the Arduino.

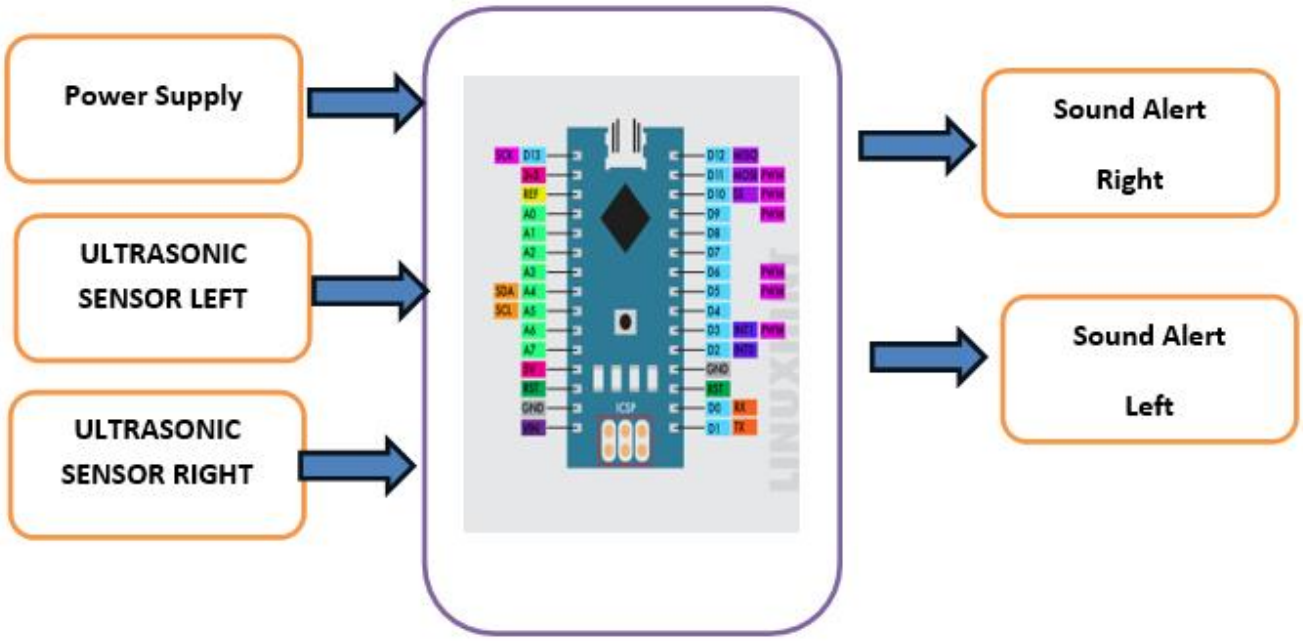

FIGURE 1: Block Diagram OG Blind Eye Glass

3.3 Arduino Programming Code:

To enable the functionality of the smart blind stick, Arduino programming code needs to be developed and uploaded to the Arduino board. The code should include the following key aspects:

a) Define the necessary variables, including the pin numbers for the ultrasonic sensor, vibrating motor/buzzer, and variables for distance measurements.

b) In the setup () function, initialize the pin modes for the sensor, motor/buzzer, and begin serial communication if required.

c) In the loop () function, measure the distance using the ultrasonic sensor by sending a trigger signal and calculating the duration of the echo signal.

d) Based on the measured distance, implement conditional statements to determine if an obstacle is within a specific range.

e) If an obstacle is detected, activate the vibrating motor or buzzer to provide haptic feedback to the user.

f) Print appropriate messages to the serial monitor to indicate the presence of obstacles or clear pathways.

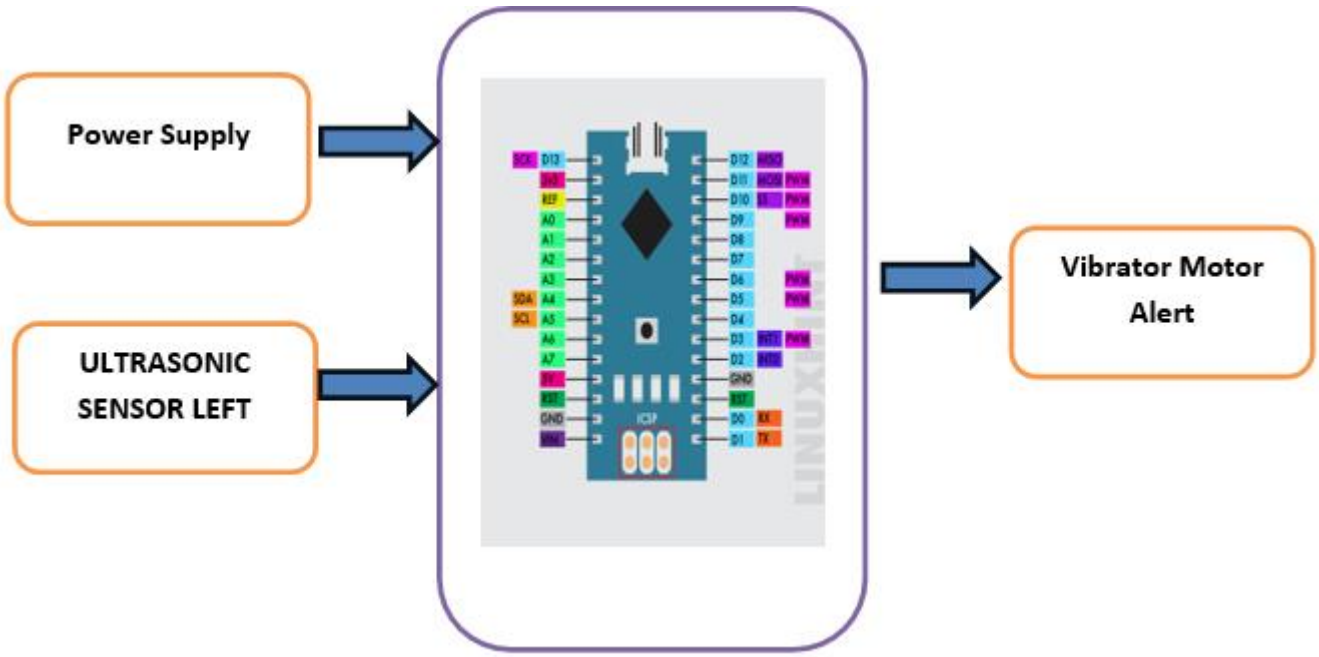

FIGURE 2: Block Diagram of Blind Stick

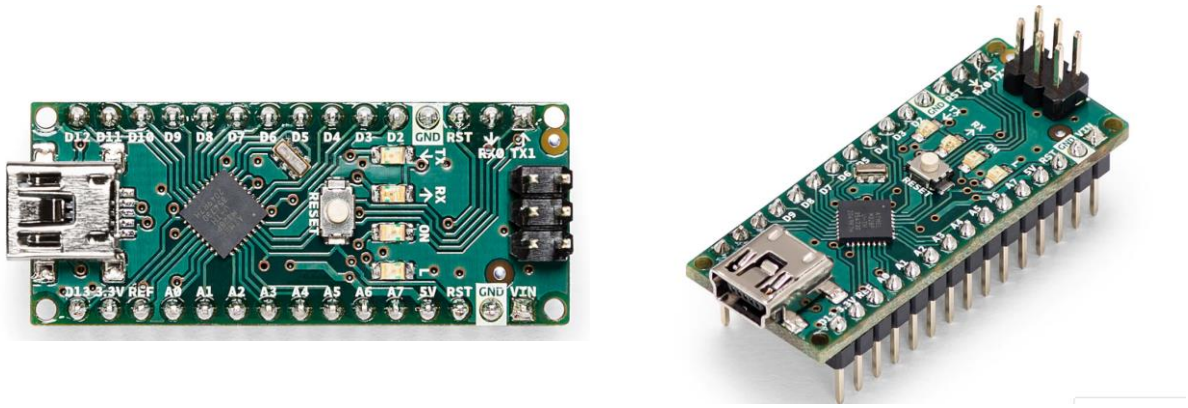

FIGURE 3: Arduino nano

TABLE 1
MICROCONTROLLER AND SPECIFICATION

Microcontroller	ATmega328
Architecture	AVR
Operating Voltage	5 V
Flash Memory	32 KB of which 2 KB used by bootloader
SRAM	2 KB
Clock Speed	16 MHz
Analog IN Pins	8
EEPROM	1 KB
DC Current per I/O Pins	40 mA (I/O Pins)
Input Voltage	7-12V
Digital I/O Pins	22 (6 of which are PWM)
PWM Output	6
Power Consumption	19 mA
PCB Size	18 x 45 mm
Weight	7 g
Product Code	A000005

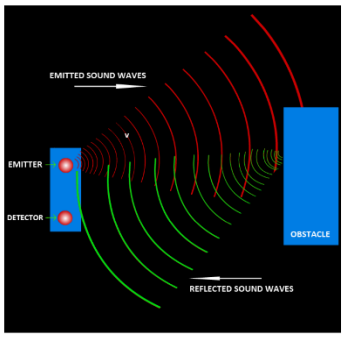

FIGURE 4: Ultrasonic sensor Diagram

TABLE 2
I/O CONTROLLER

Digital I/O Pins	22 (6 of which are PWM)
PWM Output	6
Power Consumption	19 mA
PCB Size	18 x 45 mm
Weight	7 g
Product Code	A000005

FIGURE 5: Vibration Motor

IV. CONCLUSION

The smart blind stick using Arduino demonstrates the potential to improve the mobility and independence of individuals with visual impairments. Its obstacle detection capabilities, combined with haptic or auditory feedback, create a valuable tool for safer and more confident navigation. By addressing limitations and incorporating user feedback, the smart blind stick can continue to evolve and positively impact the lives of visually impaired individuals. Smart ultrasonic sensor eyeglasses provide a valuable assistive technology for individuals with visual impairments, offering enhanced obstacle detection and improved navigation capabilities. With continued advancements and refinements, these glasses have the potential to greatly improve the quality of life and independence of visually impaired individuals.

ACKNOWLEDGEMENTS

The development of ultrasonic sticks for the blind offers a valuable tool for navigating the environment. By incorporating ultrasonic sensors into the design, these sticks can detect obstacles in real-time and provide haptic or auditory feedback to the user, assisting them in safely maneuvering through their surroundings.

The visually impaired individuals who have participated in user trials and provided feedback have played a crucial role in the development and improvement of ultrasonic sticks. Their experiences and insights have been invaluable in refining the technology and ensuring its effectiveness in real-world situations.

Furthermore, the collaboration between researchers, engineers, organizations, and the visually impaired community has been crucial in the development of ultrasonic sticks for the blind. By working together, they have created a tool that helps enhance accessibility and independence for individuals with visual impairments.

REFERENCES

[1] Agarwal, Rohit, et al. "Low cost ultrasonic smart glasses for blind." *2017 8th IEEE Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*. IEEE, 2017.

[2] Simões, Walter CSS, and V. F. De Lucena. "Blind user wearable audio assistance for indoor navigation based on visual markers and ultrasonic obstacle detection." *2016 IEEE International Conference on Consumer Electronics (ICCE)*. IEEE, 2016.

[3] Siswono, Hartono, and Widyastuti Widyastuti. "Glasses for the blind using ping ultrasonic, ATMEGA8535 and ISD25120." *TELKOMNIKA (Telecommunication Computing Electronics and Control)* 18, no. 2 (2020): 945-952.

[4] Romadhon, A. S., and A. K. Husein. "Smart stick for the blind using Arduino." *Journal of Physics: Conference Series*. Vol. 1569. No. 3. IOP Publishing, 2020.

[5] Dey, Naiwrita, et al. "Ultrasonic sensor based smart blind stick." *2018 international conference on current trends towards converging technologies (ICCTCT)*. IEEE, 2018.

Reducing Carbon Emission from Various Industries using Artificial Intellignce

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Abstract— *Basically the aim of the title is Reducing carbon emissions from various industries using Artificial intelligence. General ways where carbon are emitted from the different industries like refrigeration industries, automobile industries, food industries and cafeteria, thermal power plant, electric power plant, textile industries, manufacturing industries, construction sector (cement industries). This emissions may be direct or indirect. We have discussed about the various ways of carbon emission in different kinds of industries, ways of reducing carbon emission, measuring carbon footprints, technologies used in the industries to reduce carbon emission their advantages and disadvantages. Effect of carbon emission in the atmosphere and climate change. Finally we have found some new ways and technology to reduce carbon emission in automobile sector, food industries/restaurants.*

Keywords— Carbon Emission, Carbon footprint, Artificial Intelligence, climate change, GHG Emission, Economic growth, Energy consumption, Carbon dioxide emission, Management.

I. INTRODUCTION

1.1 Carbon Footprints

A carbon footprint is the total greenhouse gas (GHG)emissions caused by an individual, event, organization, service, place or product, expressed as carbon dioxide equivalent. Greenhouse gases, including the carbon-containing gases carbon dioxide and methane, can be emitted through the burning of fossil fuels, land clearance and the production and consumption of food, manufactured goods, materials, wood, roads, buildings, transportation and other services.[2] The term was popularized by a $250 million advertising campaign by the oil and gas company BP in an attempt to move public attention away from restricting the activities of fossil fuel companies and onto individual responsibility for solving climate change.

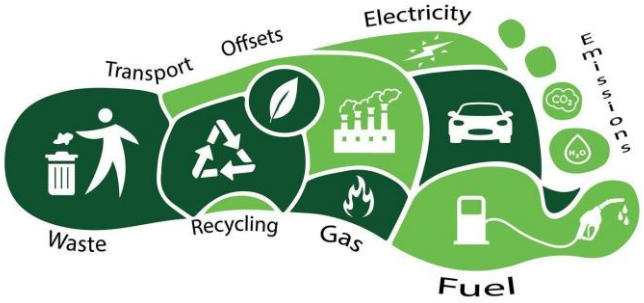

FIGURE 1: Carbon Footprints

In most cases, the total carbon footprint cannot be calculated exactly because of inadequate knowledge of and data about the complex interactions between contributing processes, including the influence of natural processes that store or release carbon dioxide. For this reason, Wright, Kemp, and Williams proposed the following definition of a carbon footprint: A measure of the total amount of carbon dioxide (CO2) and methane (CH4) emissions of a defined population, system or activity, considering all relevant sources, sinks and storage within the spatial and temporal boundary of the population, system or activity of interest.

Calculated as carbon dioxide equivalent using the relevant 100-year global warming potential (GWP100). CARBON STRATEGY Carbon strategy is a term that refers to a systematic plan of action for managing carbon consumption and emissions related to food manufacturing and distribution activities. The impetus for carbon management strategy is rooted in several driving forces (Holcomb, 2010; Park, 2010):

1. Global climate change issues
2. Stakeholder and investor demand
3. Environmentally and socially conscious consumers
4. Government regulations and policies
5. Return on investment

II. MEASURING CARBON FOOTPRINTS

Calculating the carbon footprint of industry, product, or service is a complex task. One tool industry uses Life-cycle assessment (LCA), where carbon footprint may be one of many factors taken into consideration when assessing a product or service. The International Organization for Standardization has a

standard called ISO 14040:2006 that has the framework for conducting an LCA study .ISO 14060 family of standards provides further sophisticated tools for quantifying, monitoring, reporting and validating or verifying of GHG emissions and removals.[29] Another method is through the Greenhouse Gas Protocol ,a set of standards for tracking greenhouse gas emissions (GHG) across scope 1, 2 and 3 emissions within the value chain.

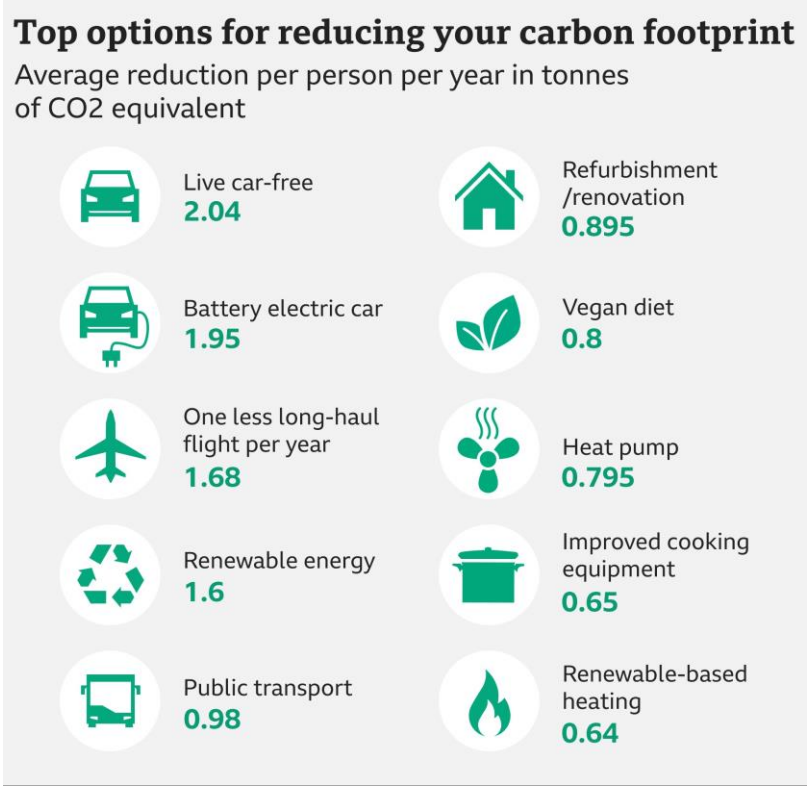

FIGURE 2: Process to measure Carbon Footprint

Predicting the carbon footprint of a process is also possible through estimations using the above standards. By using Emission intensities/Carbon intensities and the estimated annual use of fuel, chemical, or other inputs, the carbon footprint can be determined while a process is being planned/designed.

III. VARIOUS WAYS OF CARBON EMISSIONS

There are two ways of Carbon Emissions-

I) Direct Carbon Emission

II) Indirect Carbon Emissions

3.1 Direct Carbon Emissions

Direct or 'scope 1' carbon emissions come from sources that are directly from the site that is producing a product or delivering a service. An example for industry would be the emissions related to burning a fuel on site. On the individual level, emissions from personal vehicles or gas burning stoves would fall under scope 1. Indirect Carbon Emissions Indirect carbon emissions are emissions from sources upstream or downstream from the process being studied, also known as scope 2 or scope 3 emissions. Examples of upstream, indirect carbon emissions may include:

- Transportation of materials/fuels
- Any energy used outside of the production facility
- Wastes produced outside of the production facility

Examples of downstream, indirect carbon emissions may include:

- Any end-of-life process or treatments
- Product and waste transportation
- Emissions associated with selling the product.

3.2 Indirect Carbon Emissions

Scope 2 emissions are the other indirect related to purchased electricity, heat, and/or steam used on site. Scope 3 emissions are all other indirect emissions derived from the activities of an organisation but from sources which they do not own or control. Role of Artificial Intelligence (AI) in reducing Carbon Emissions in Various Industries. The great strength of AI lies in its ability to learn by experience, collecting massive amounts of data from its environment, intuiting connections that humans fail to notice, and recommending appropriate actions on the basis of its conclusions. Companies looking to reduce their carbon footprint should turn the AI spotlight on all three components of the effort:

3.3 Monitoring Emissions

Companies can use AI-powered data engineering to automatically track emissions throughout their carbon footprint. They can arrange to collect data from operations, from activities such as corporate travel and IT equipment, and from every part of the value chain, including materials and components suppliers, transporters, and even downstream users of their products. AI can exploit data from new sources such as satellites. And by layering intelligence onto the data, AI can generate approximations of missing data and estimate the level of certainty of the results. Predicting Emissions. Predictive AI can forecast future emissions across a company's carbon footprint, in relation to current reduction efforts, new carbon reduction methodologies, and future demand. As a result, they can set, adjust, and achieve reduction targets more accurately. Reducing Emissions. By providing detailed insight into every aspect of the value chain, prescriptive AI and optimization can improve efficiency in production, transportation, and elsewhere, thereby reducing carbon emissions and cutting costs. Carbon Emission from Automobile Sector

There is both way of Carbon Emission in Automobile sector.ie-Direct & Indirect Carbon Emissions.

Direct Carbon Emission- Exhaust gases are removed from exhaust pipes. CO2 emissions per passenger-kilometre (pkm) for all road travel for 2011 in Europe as provided by the European Environment Agency *109 g/kmCO2 For vehicles, average figures for CO2 emissions per kilometer for road travel for 2013 in Europe, normalized to the NEDC test cycle, are provided by the International Council on Clean Transportation:

- Newly registered passenger cars: 127 gCO2/km
- *Hybrid-electric vehicles: 92 gCO2/km
- *Light commercial vehicles (LCV): 175 gCO2/km Average figures for the United States are provided by the US Environmental Protection Agency, based on the EPA Federal Test Procedure, for the following categories:
- Passenger cars: 200 gCO2/km (322 g/mi)
- Trucks: 280 gCO2/km (450 g/mi)
- Combined: 229 gCO2/km (369 g/mi)

These are directly affecting atmosphere ,contributes in green house gases which leads to green house effect and then global warming. To reduce these engineers have invented technologies to reduce carbon emission. Like-catalytic converter, EGR.

IV. IMPROVEMENT REQUIRED IN THE CURRENT TECHNOLOGIES

These technologies are not AI controlled, which are making them less efficient and less towards smart tech.

AI Controlled Lithium Peroxide coated chamber:

Lithium peroxide readily absorbs carbon dioxide. which is solid in nature. A lithium peroxide coated chamber can be built where exhaust gases from exhaust manifold comes out and gets into the lithium peroxide chamber where at the inlet of the chamber gas meter will be installed which will measure the volume of air entering into the chamber which will be monitered using sensors where coding will be feed so that machine keeps a record of different conditions (Machine Learning) where engine produces more exhaust gases and in which condition the engine produces less exhaust gases, during excess throttling condition, when the vehicle is at still position etc . so that it will keep the records and all the data will be visible at the display where the driver can see and be aware of exhaust conditions which can be minimized somewhat in that way.

Parts used are:

- Sensors
- Lithium peroxide chamber
- Gas meter
- Sealant

Advantages

- Reduced parts in the vehicle which indirectly reduces indirect carbon emission.
- Efficiency increases
- cost effective

V. CARBON EMISSION FROM FOOD INDUSTRIES

In a 2014 study by Scarborough, the real-life diets of British people were surveyed and their dietary greenhouse gas footprints estimated. Average dietary greenhouse-gas emissions per day (in kilograms of carbon dioxide equivalent) were:

- 7.19 for high meat-eaters
- 5.63 for medium meat-eaters
- 4.67 for low meat-eaters
- 3.91 for fish-eaters
- 3.81 for vegetarians
- 2.89 for vegans

Lots of food is wasted in the food industries and restaurants. Which in return produces excess of carbon to the atmosphere. Three important terms are at the center of carbon consumption and emission issues for food processors:

- Green house gas (GHG)
- Carbon footprint
- Life cycle assessment (LCA)

Green house gasses (GHGs) absorb infrared radiation in the atmosphere. GHGs common in food processing activities. Most of the GHGs emitted from food processing plants are a result of the use of electricity, natural gas, coal, diesel, gasoline or other energy sources. For example, the combustion of natural gas results in the emission of carbon dioxide according to the following chemical formula:

$$CH4 + 2O2 => CO2 + 2H2O + heat$$

5.1 Some Direct & Indirect Carbon Emissions in Food Industry

- *Direct emissions – sources owned or controlled by the food processor (e.g., boiler, heater, cooker, vehicle fleet, waste water treatment). NOTE: GHGs not covered in the Kyoto Protocol (CFCs, NOx, etc.) are not included here.
- *Electricity indirect emissions – those created by the use of purchased electricity.
- *Other indirect emissions – those emissions that occur as a result of food processing activities but from sources not owned or controlled by the manufacturer (e.g., ingredients, freight, equipment manufacture, solid waste disposal, contractor, employee business travel). NOTE: This is an optional reporting category. WAYS OF REDUCING CARBON EMISSIONS ARE AS FOLLOWS:

5.2 Inventory GHG emissions to establish a baseline

Footprint

- Overall facility
- Individual products

5.3 Consider GHG emissions in core business strategy

- Product development (low or zero carbon products)
- Advertising and marketing
- Capital expenses
- Planning
- Product development and design

5.4 Assess internal opportunities to reduce GHG emissions

- Capital improvements
- High efficiency equipment
- Waste heat recovery
- Insulation
- Alternative energy sources
- Logistics improvements
- Packaging reduction and recycling

Disadvantages

Six Sigma is extremely costly for many small businesses to implement. Employees must obtain training from certified Six Sigma institutes in order for an enterprise to receive Six Sigma certification. Which is not possible for small and very small scale food industries and restaurants.

VI. PROPOSED TECHNOLOGY

6.1 *Smart Artificial Intelligence (Ai) Controlled Dustbin or Container:

A device is designed for reducing carbon emission, also certified from HCL Technologies.

PARTS USED:

- CONTAINER
- WEIGHING PLATE

- WIRING
- SENSORS
- BEEPER
- DISPLAY MONITOR
- Electrical circuit unit
- chip

WORKING

It is a kind of smart dustbin or a container having weighing plate at its base which will be connected with wires to the display screen. This device will work in this way when the food products are thrown inside the container it will weigh the mass of food inside and simultaneously keep the record in the chip coding will be fed where the different data will be provided before that for making (ex: 10g of food , 2g of fuel is burnt) and likewise many more values will be fed which will after the whole day it will calculate the amount of fuel burnt in excess by getting the value from the weighing plate and as machine learning is there the device will automatically fed the data and detect when the carbon emission per day exceeds as per given minimum limit, which will in result beep a warning bell and show the amount of carbon emissions to the food management authorities and chefs as well using **if else condition in C++**, which will apparently help in reducing the carbon emission.

ADVANTAGES

This is a simple and affordable device which can be used by every food industry and restaurants etc

*There are many more industries where carbon emissions can be reduced like-

- Textile Industries
- Thermal Power Plants
- Electric Power Plants
- Manufacturing Industry

VII. CONCLUSION

This study reviews current knowledge about greenhouse warming and examines a wide variety of potential responses. I have found that, even given the considerable uncertainties in our knowledge of the relevant phenomena, greenhouse warming poses a potential threat sufficient to merit prompt responses. People in this country could probably adapt to the likely changes associated with greenhouse warming. The costs, however, could be substantial. Investment in mitigation measures acts as insurance protection against the great uncertainties and the possibility of dramatic surprises. In addition, I believes that substantial mitigation can be accomplished at modest cost. In other words, insurance is cheap. These responses, however, must be based on consideration of the uncertainties, costs of actions and inaction, and other factors. Actions that would help people reducing carbon emission in automobile sector is described. Actions that would help people reducing carbon emission in food industries/restaurants is described.

The author has found some ways of reducing carbon emission by tracing carbon footprints in various industries using Artificial Intelligence (AI).

REFERENCES

[1] WWF 2015. Impact of Global Warming and Climate Change Report, Australia

[2] Liu, D.; Guo, X.; Xiao, B. What causes growth of global greenhouse gas emissions? Evidence from 40 countries. Sci. Total. Environ. 2019, 661, 750–766.

[3] Zhang, Y.-J.; Da, Y.-B. The decomposition of energy-related carbon emission and its decoupling with economic growth in China. Renew. Sustain. Energy Rev. 2015, 41, 1255–1266.

[4] The World Bank Group. World Development Indicators. 2018. Available online: https://data.worldbank.org/ (accessed on 10 June 2019).

[5] Heede, R. Tracing anthropogenic carbon dioxide and methane emissions to fossil fuel and cement producers, 1854–2010. Clim. Chang. 2014, 122, 229–241.

[6] Liu, L.-J.; Liang, Q.-M. Changes to pollutants and carbon emission multipliers in China 2007–2012: An input- output structural decomposition analysis. J. Environ. Manag. 2017, 203, 76–86. [CrossRef] [PubMed]

[7] Wang, H.; Ang, B.; Su, B. A Multi-region Structural Decomposition Analysis of Global CO2 Emission Intensity. Ecol. Econ. 2017, 142, 163–176. [CrossRef]

[8] Hammond, G.; Norman, J. Decomposition analysis of energy-related carbon emissions from UK manufacturing. Energy 2012, 41, 220–227. [CrossRef]

[9] Ren, S.; Yin, H.; Chen, X. Using LMDI to analyze the decoupling of carbon dioxide emissions by China's manufacturing industry. Environ. Dev. 2014, 9, 61–75. [CrossRef]

[10] Ouyang, X.; Lin, B. An analysis of the driving forces of energy-related carbon dioxide emissions in China's industrial sector. Renew. Sustain. Energy Rev. 2015, 45, 838–849. [CrossRef].

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