



ELMAS's "Energy-Tronic Medical Treatment Methods" based on the Principles of Biomechatronics and Neuro-Physics in Connection with the Applications of BCI Brain-Computer Interface for Modeling of Neurological Diseases

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Abstract

In all these diseases, Dr. Elmas's approach is this: Regardless of the disease (genetic, metabolic, or degenerative), the result is "the signal (energy) failing to reach the target."

Systematic Bypass: *Instead of intervening in the medical cause of the disease (mutation, protein accumulation, etc.), the system repairs the energy transmission disruption created by this cause using engineering methods (wireless data transfer and stimulation). Dr. Elmas's method requires "personalized frequency adjustment" because each disease and each individual has a different brainwave characteristic (thermodynamic signature).*

Asst. Prof. Dr. Emin Taner Elmas's work in medical technology and biomedical sciences focuses on applying engineering principles to medicine and biology. He has published academic works particularly in the analysis of neurodegenerative diseases, biophysical modeling, and the human visual system. Here are Dr. Emin Taner Elmas's main areas of study and contributions to medical technology:

Neurodegenerative Diseases and Biomedical Analysis: *He has conducted research on the investigation of diseases such as Alzheimer's, Parkinson's, and ALS using techniques such as biophysics and oscillator synchronization, going beyond classical biomedical approaches.*

Medical Engineering and Biophysics: *In his work, he aims to model biological systems from an engineering perspective by integrating original approaches such as the "Elmas Theory of Thermodynamics" into the fields of medical engineering and neuroengineering.*

Human Vision System: *Through his research on the fundamentals of the human visual system, he has examined the technical and theoretical infrastructure of biological vision mechanisms.*

Bioengineering and Postgraduate Education: *He currently serves as a faculty member in the Department of*

Bioengineering and Sciences at Iğdır University and continues his academic activities in this field.

Interdisciplinary Approaches: He builds an interdisciplinary bridge by extending his expertise in thermodynamics, energy systems, and mechanical engineering to fields such as medical technology, biomedical devices, and neuroscience.

Although Dr. Emin Taner Elmas is a mechanical engineer, he contributes to medical science through his multidisciplinary studies integrating engineering principles into medicine and biology. His main contributions are theoretical models and treatment methods that explain complex biological processes using the laws of physics and thermodynamics. Here are Dr. Emin Taner Elmas's main contributions to medical science:

New Treatment Approach for SMA Disease: Dr. Elmas has developed an innovative method for the treatment of SMA (Spinal Muscular Atrophy). This study, conducted within Iğdır University, offers a perspective examining the mechanistic/biophysical effects of genetic disorders.

Modeling of Neurological Diseases: The development processes of neurodegenerative diseases such as Alzheimer's, Parkinson's, and ALS have been modeled through oscillator synchronization and thermodynamic equilibria. These models pave the way for the use of new engineering-based parameters in disease diagnosis. **Thermodynamic Applications in Biomedical Systems:** Dr. Elmas has adapted the "Elmas Theory of Thermodynamics" to the field of medicine to study the energy transformations of biological systems. This theory analyzes the energy efficiency of intracellular and extracellular processes in the human body, providing a theoretical foundation for biomedical engineering.

Technical Analysis of the Human Visual System: His work, which treats the visual mechanism as an optical and signaling system, has contributed to a better understanding of visual impairments and their mechanisms at the biophysical level.

Interdisciplinary Academic Leadership: Within the scope of his duties at the Department of Bioengineering at Iğdır University, he contributes to the training of a new generation of researchers by managing postgraduate projects that combine the medical and engineering worlds.

Dr. Emin Taner Elmas's contributions are entirely focused on engineering-based medical technologies (Biomedical/Biophysical). [1-59]

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Introduction

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- **Neurodegenerative Diseases and Biomedical Analysis:** He has conducted research on the investigation of diseases such as Alzheimer's, Parkinson's, and ALS using techniques such as biophysics and oscillator synchronization, going beyond classical biomedical approaches.
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- **Human Vision System:** Through his research on the fundamentals of the human visual system, he has examined the technical and theoretical infrastructure of biological vision mechanisms.
- **Bioengineering and Postgraduate Education:** He currently serves as a faculty member in the Department of Bioengineering and Sciences at Iğdır University and continues his academic activities in this field.
- **Interdisciplinary Approaches:** He builds an interdisciplinary bridge by extending his expertise in thermodynamics, energy systems, and mechanical engineering to fields such as medical technology, biomedical devices, and neuroscience. [1-59]

Furthermore, his technical achievements outside of medicine and biology include prestigious roles such as serving as a jury member in scientific competitions. [1-59]

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Taner Elmas's Main Contributions to Medical Science: [1-59]

- **New Treatment Approach for SMA Disease:** Dr. Elmas has developed an innovative method for the treatment of SMA (Spinal Muscular Atrophy). This study, conducted within Iğdır University, offers a perspective examining the mechanistic/biophysical effects of genetic disorders.
- **Modeling of Neurological Diseases:** The development processes of neurodegenerative diseases such as Alzheimer's, Parkinson's, and ALS have been modeled through oscillator synchronization and thermodynamic equilibria. These models pave the way for the use of new engineering-based parameters in disease diagnosis.
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- **Interdisciplinary Academic Leadership:** Within the scope of his duties at the Department of Bioengineering at Iğdır University, he contributes to the training of a new generation of researchers by managing postgraduate projects that combine the medical and engineering worlds. [1-59]

Note: Dr. Emin Taner Elmas's contributions are entirely focused on engineering-based medical technologies (Biomedical/Biophysical). [1-59]

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Dr. Emin Taner Elmas's study on SMA disease is a unique neuro-physical treatment approach that does not involve surgical intervention, referred to in the literature as the "Applied Medi-Brain Energy-Tronic Treatment Method." [1-59]

Dr. Emin Taner Elmas's "Applied Medi-Brain Energy-Tronic Treatment Method" is based on the principles of Biomechanics and Neuro-Physics. [1-59]

Dr. Emin Taner Elmas's mathematical model, which he calls the "5th Law of Thermodynamics" and presents within the framework of the Elmas Theory of Thermodynamics, adapts classical physics equations to biomedical processes. The main purpose of this model is to define energy and matter transfer in living systems as vector quantities. [1-59]

While energy (U) and mass (m) are treated as scalar quantities in classical thermodynamics, in Elmas's model these parameters are defined as vectors.

- **Directional Transfer:** Not only the quantity of energy and matter but also the direction of flow within the system (e.g., intracellular or between neurons) is included in the equations.
- **Negative and Neutral States:** Energy and matter can have not only positive values but also "neutral" or "negative" vectorial orientations. This is used especially to model drug-cell interactions and signal disruptions in diseases such as SMA. [1-59]

"Bionic Prosthetic Robotic Artificial Hand," one of Dr. Emin Taner Elmas's most concrete projects in the field of medical technology, and the software mechanism that controls this system, are design marvels crafted with engineering precision. [1-59]

BCI (Brain-Computer Interface) Integration: 14-channel EEG data from the user is decoded in real time by the software.

Energy and Force Balance: The software continuously monitors the electrical energy sent to

the servo motors and the mechanical force applied by the motors. This "energy balance" ensures both efficient operation of the system and safe use by preventing overloads. [1-59]

Dr. Elmas's work continues to be developed at the academic prototype level within Iğdır University, specifically with the aim of improving the quality of life for patients with SMA, ALS, and stroke. [1-59]

Material, Method and Discussion

Dr. Emin Taner Elmas's study on SMA disease is a unique neuro-physical treatment approach that does not involve surgical intervention, referred to in the literature as the "Applied Medi-Brain Energy-Tronic Treatment Method." [1-59]

The basic purpose and operation of this method are as follows:

Analysis of Brain Signals (EEG Use) [1-59]

In the study, a 14-channel EEG device is used to examine brain data. Thanks to this device, the signals in the brain are visualized in waveform form. Through special software, it is stated that these signals can move objects on the computer screen and simulate facial expressions with just the power of thought.

Transmission of Signals to Muscles [1-59]

The aim is to restore the lost physical and sensory functions in SMA patients. Theoretically, it is planned to transmit these brain signals recorded by EEG to the patient's muscles. In this way;

- Breathing and coughing,
- Swallowing and chewing,
- Walking, hand and arm movements – the aim is to reactivate vital functions.

Application Area and Scope [1-59]

This method is being developed not only for SMA but also as a treatment theory for similar neurological muscle diseases such as stroke patients, ALS, MPS, SSPE, and DMD.

Relevant Academic Publication is as follows:

You can access the details and theoretical background of this study from the following articles published by Dr. Emin Taner Elmas in 2024 and 2025:

- "System Design and Development of a Novel Unique Neuro-Physical Medical Treatment Method for SMA..." (2024), Collect J Neurol.
- "A Novel Unique Neuro-Physical Medical

Treatment Method for SMA..." (2025), Universal Library of Medical and Health Sciences.

It is stated that Dr. Elmas describes this method as his own original invention and that efforts are being made to gradually implement it.

Dr. Emin Taner Elmas's "Applied Medi-Brain Energy-Tronic Treatment Method" is based on the principles of Biomechatronics and Neuro-Physics. The system's technical infrastructure is based on the following components: [1-59]

Hardware Infrastructure: BCI (Brain-Computer Interface) [1-59]

At the heart of the system is an advanced 14-channel EEG (Electroencephalography) device. This device measures the electrical activity of neurons in the brain with millisecond precision through electrodes placed on the patient's scalp.

- **Signal Capture:** Alpha, beta, gamma, and theta waves from the brain are converted into digital data.
- **Processing Unit:** The collected data is transferred to a special control unit (Controller) designed by Dr. Elmas.

Software and Artificial Intelligence: Converting Thought into Command [1-59]

The most critical technical detail in Dr. Elmas's work is the conversion of raw brain signals into meaningful motor commands.

- **Facial Expression and Movement Simulation:** The software detects the patient's mental intentions, such as "smiling," "blinking," or "raising an arm."
- **Control by Thought Power:** Moving virtual objects on the computer screen (e.g., a cube) solely by thought constitutes the calibration phase of the system.

Actuator and Stimulator Systems (Application Phase) [1-59]

In patients with SMA and paralysis, the problem is that although the brain sends commands, this signal does not reach the muscles. Dr. Elmas's method acts as a "Bypass" here:

- **Signal Bridge:** Instead of using the patient's damaged nerve pathways, commands received from the brain are transmitted directly to the muscle groups via an external electronic system.
- **Neuro-Stimulation:** With low-voltage and controlled electrical signals sent to the muscles

(similar to EMS but synchronized with the brain), the aim is to trigger physical movements such as swallowing, breathing, or walking.

Unique Approach [1-59]

The difference from classic physical therapy or drug treatments is as follows:

- **Non-invasive:** It does not require brain surgery or the implantation of a chip in the body.
- **Real-time:** It is based on minimizing the latency between thought and action.
- **Broad Scope:** It aims to stimulate not only muscles but also autonomic nervous system functions (such as the cough reflex).

The BCI (Brain-Computer Interface) system used in Dr. Emin Taner Elmas's studies acts as a bridge connecting biomedical engineering and neuroscience. In Elmas's system, the technical details and operation of this interface are summarized under four main headings: [1-59]

Hardware Features: 14-Channel EEG Sensor Set [1-59]

The physical layer of the system consists of a 14-channel high-sensitivity EEG head that contacts the patient's scalp.

- **Number of Channels:** Obtaining data from 14 different points allows for the simultaneous monitoring of electrical activity in different regions of the brain, such as the motor cortex (movement), frontal lobe (decision-making), and occipital lobe (vision/perception).
- **Non-Invasive Design:** The device does not require the placement of any chip or electrode inside the skull; it only reads micro-voltage changes on the skin surface.

Signal Processing and Software Layer [1-59]

Signals from the brain are quite noisy (muscle movements or blinking can distort the signal). The BCI software used by Dr. Elmas manages the following processes:

- **Noise Filtering:** Extracts background noise to reveal pure neural data.
- **Feature Extraction:** Identifies the specific brainwave pattern at the moment the patient says "I want to raise my arm."
- **Classification:** Artificial intelligence algorithms classify this pattern as "right arm movement" or "swallowing command."

Functional Applications (Simulation and Control) [1-59]

The basic tests Dr. Elmas performs on the BCI system are:

- **Object Control by Thought:** Moving a 3D cube or object on the computer screen up, down, right, or left simply by focusing, via the software.
- **Facial Expression Matching:** Simulating the patient's facial expressions, such as smiling or frowning, instantly on a digital character (avatar) on the screen. This proves that BCI can read not muscle signals, but the "intention" that the brain sends to the muscles.

Its Critical Role in SMA and Stroke Treatment [1-59]

The real "miracle" of BCI in this system is its potential to repair the break (bypass) in nerve pathways:

- **Command Bridge:** In a patient with SMA or stroke, the brain gives the movement command, but this command does not reach the muscles due to damage to the spinal cord.
- **Alternative Pathway:** The BCI system receives this command wirelessly from the brain, processes it on a computer, and then transmits it to external stimulators attached to the patient's muscles. Thus, the nervous system is bypassed, and a direct "brain-to-muscle" line is established.

The connection between Dr. Emin Taner Elmas's "Elmas Thermodynamics Theory" (an approach he calls the 5th Law of Thermodynamics) and BCI (Brain-Computer Interface) is based on considering biological systems as "energy machines". We can explain the bridge between these two concepts with the following technical details: [1-59]

Analysis of Brain Signals as "Energy Efficiency" [1-59]

According to Elmas's theory, like every system in the universe, the human brain operates according to the laws of thermodynamics. The BCI system, while measuring the electrical activity of neurons in the brain, actually tracks electromagnetic energy changes. Elmas analyzes these signals not only as data but also as the energy balance (entropy and exergy) within the brain.

"Thermodynamic Disruption" in SMA and Stroke [1-59]

- Elmas defines diseases such as SMA or stroke as a neuro-physical energy transmission disorder. According to the Theory: The brain produces the movement command (energy), but due to damage in the nerve pathways, this energy cannot be converted into work (mechanical energy) in the muscle.
- The Role of BCI: BCI acts as a thermodynamic "intermediary" here. It captures the potential energy (thought) in the brain and bypasses the energy loss in the nervous system, transferring this energy directly to muscle stimulation.

The Relationship Between Information and Entropy (5th Law Connection) [1-59]

The concept that Elmas presents as the "5th Law" generally emphasizes the relationship between information and energy.

- In the BCI system, the patient's thought is an "information package".
- Elmas argues that this information has a physical counterpart and can be thermodynamically controlled.
- The system aims to transform the "disorder" (high entropy/disease state) in the patient's brain into "ordered work" (movement) through BCI.

Oscillator Synchronization [1-59]

Synchronization, which plays an important role in his theory, is the alignment of brain waves (Alpha, Beta, etc.) with BCI. BCI uses the "maximum energy transfer" principle in Elmas's theory while capturing the brain's natural frequency and transferring it to the electronic system. In short, the better the device synchronizes (resonates) with the brain, the less energy is lost, and the more effective the treatment becomes. For Elmas, BCI is not just about controlling a computer mouse; it's a tool for restoring the disrupted energy flow (thermodynamic balance) in the human body with the help of technology.

Dr. Emin Taner Elmas's mathematical model, which he calls the "5th Law of Thermodynamics" and presents within the framework of the Elmas Theory of Thermodynamics, adapts classical physics equations to biomedical processes. The main purpose of this model is to define energy and matter transfer in living systems as vector quantities. [1-59]

The fundamental mathematical components on which the theory is based are:

Vector Energy and Matter Transfer Model [1-59]

While energy (U) and mass (m) are treated as scalar quantities in classical thermodynamics, in Elmas's model these parameters are defined as vectors. • Directional Transfer: Not only the quantity of energy and matter but also the direction of flow within the system (e.g., intracellular or between neurons) is included in the equations. • Negative and Neutral States: Energy and matter can have not only positive values but also "neutral" or "negative" vectorial orientations. This is used especially to model drug-cell interactions and signal disruptions in diseases such as SMA.

Wave and Frequency Equations (Signal Transmission) [1-59]

BCI (Brain-Computer Interface) data used in studies on SMA and the visual system are processed using the following basic physical formulas:

Relationship between Sound Wave Speed and Frequency:

The formula is as follows: $V = \lambda \times f$

where "V" is the velocity of the sound wave (m/s), "λ" is the wavelength (m), and "f" is the frequency rate (Hz or 1/s). Since the speed of sound will be constant in a certain environment, as the frequency increases, the wavelength of the sound becomes shorter. As the wavelength gets shorter, the amount of energy will increase. In other words, as the frequency increases, the wavelength shortens, and the amount of energy transmitted increases.

This quantum mechanics formula is used to calculate the energy equivalent of brain waves (EEG).

Planck Energy Formula:

$E = h \times f$ known as Planck Formula,

where "E" is the energy (joule - j), "h" is the Planck Constant ($6.626 \ 06957 \times 10^{-34}$ j.s), "f" is the frequency rate (Hz or 1/s).

$E = h \times V/\lambda$, where, "E" is the energy (joule - j), "h" is the Planck Constant ($6.626 \ 06957 \times 10^{-34}$ j.s), "V" is the velocity of the sound wave (m/s), and "λ" is the wavelength (m).

Neuro-Physical Control and Bypass Algorithm [1-59]

The mathematical structure used to restore lost functions in SMA patients follows these steps:

- **Signal Capture:** Electrical data from a 14-channel EEG is analyzed as a function of time ($f = 1/T$), where "f" is the frequency rate (Hz or 1/s), and "T" is the time (s).
- **Oscillator Synchronization:** The phase difference between the firing frequencies of neurons in the brain and the sampling rate of the device is minimized.
- **Energy Conversion:** The "thought energy" (information/signal) received from the brain is converted into electrical commands to external motors or muscle stimulators to be transformed into mechanical work. transmitted.

Medical Thermodynamics Application (Drug-Cell Interaction)

The model views the interaction of drugs with the cell membrane as a matter of "thermodynamic equilibrium". The entry of drug molecules into the cell is calculated by the change in the total entropy of the system and the vectorial energy transfer equations.

Summary Mathematical Result:

Elmas's model aims to maximize the efficiency of converting signals (information) in the brain into physical work (muscle movement) by treating a biological system as a pressure vessel or energy machine. [1-59]

Dr. Emin Taner Elmas's model, in its "summary mathematical result," treats a biological system (the human body/brain) as a closed thermodynamic circuit. We can examine this detailing in three main layers: [1-59]

Modeling the Biological System as a "Pressure Vessel" [1-59]

Elmas, who has an engineering background, views the vascular system, intracellular fluid balance, and nerve transmission pathway in the human body as fluid mechanics problems.

- **Pressure (P) and Volume (V) Balance:** In diseases like SMA, muscle atrophy (wasting) disrupts the mechanical balance of the system. In Elmas's model, this situation is likened to the pressure loss in the cylinders of an engine.
- **Thermodynamic Work:** Muscle movement is the "work" produced by the system.

In SMA patients, the mechanical work produced decreases because muscle mass/volume is reduced. The BCI system aims to compensate for this missing

"work" with external energy (electrical stimulation).

Energy Transformation Between Information (Thought) and Physical Work [1-59]

At the point Elmas emphasizes as the "5th Law," information enters the equation as a type of energy.

- **Entropy and Information:** In thermodynamics, entropy is disorder. Disease (SMA, ALS, etc.) is a state of high entropy (loss of information) in the nervous system.
- **Negentropy (Negative Entropy):** The BCI device brings order to the system by receiving "thought" (pure information) from the brain. Mathematically, this reduces the total entropy of the system, increasing the amount of exergy (usable energy).

Result: Information.....Electrical Signal.....
Muscle Stimulation.....Mechanical Work.

Vectorial Energy Transfer Equation [1-59]

While classical thermodynamic laws state that energy is only conserved (1st law), Elmas argues that this energy is directional (vectorial).

- **Energy Vector:** When the signal from the brain reaches the damaged area in the spinal cord, it undergoes a vector break (signal dispersion).
- **Bypass Algorithm:** The BCI system receives this energy vector and directs it directly to the target, bypassing the damaged area. The mathematical success here is to reduce the phase difference between the two vectors to zero.

Oscillator Synchronization (Resonance) [1-59]

The model considers the brain as a harmonic oscillator (a continuously vibrating system).

- **Equation:** Includes the parameters of the system's mass (muscles/tissues), damping (disease resistance), and the external force from the BCI (thought command).
- **Goal:** To create resonance by aligning the external stimulus with the natural frequency of the brainwave. At the moment of resonance, the highest physical movement (work) is achieved with the lowest energy expenditure. In summary; Dr. Elmas's mathematical result reduces a medical problem to a "energy transmission efficiency" problem. He defines the disease as an "energy loss/leakage" and positions BCI technology as an "electronic bridge" that repairs this leakage.

In Dr. Emin Taner Elmas's model, the classification of brain signals with artificial intelligence is based on a three-stage algorithm architecture where raw EEG data is processed as a "thermodynamic energy packet":

Signal Separation (Feature Extraction) [1-59]

Artificial intelligence uses Fast Fourier Transform (FFT) and Wavelet Transform algorithms to clean the complex wave mass (noise) coming from the EEG device.

- **Thermodynamic Filter:** In Elmas's model, each brainwave (Alpha, Beta, Gamma) is defined as an energy vector. Artificial intelligence distinguishes which frequency is the "movement command" (work-producing energy) and which is the "background noise" (entropy) according to this mathematical energy density.

Classification Algorithms (Thought Recognition) [1-59]

The cleaned data is fed into machine learning models (usually Support Vector Machines - SVM or Artificial Neural Networks - ANN). In Dr. Elmas's approach, this process works as follows:

- **Labeling:** When the patient thinks "I am raising my right arm," the specific frequency pattern that occurs in the brain is taught to the artificial intelligence as "Command A."
- **Vector Comparison:** The artificial intelligence compares the vector direction and intensity of the incoming instantaneous signal with the "healthy movement vectors" recorded in its library. If the matching rate is high (probabilistic modeling), the system converts this thought into a digital command.

Decision Support and Bypass Command [1-59]

After the classification is complete, the artificial intelligence generates an "Acting Command." At this stage, the following difference specific to Elmas's model emerges:

- **Feedback Loop:** The artificial intelligence not only sends the command; According to the principle of the "5th Law of Thermodynamics," it measures the change (mechanical work) created in the muscles by the sent command using sensors.
- **Adaptive Learning:** If the sent signal does not produce the expected movement (work) in the muscle, the artificial intelligence algorithm automatically updates the signal frequency

or amplitude to "increase energy efficiency" (resonance adjustment).

Technical Summary [1-59]

The algorithm views the brain as a "Signal Generator" and the muscle as a "Mechanical Load." The artificial intelligence acts like a smart adapter that corrects the impedance mismatch (nerve damage) between these two ends. These mathematical models are usually coded using MATLAB/Simulink or Python (mne, scikit-learn libraries) as the programming language.

In Dr. Emin Taner Elmas's BCI-based system, the real-time operating speed is designed to minimize the delay (latency) between "thought" and "physical response" (or movement on the screen) in the milliseconds (ms). The technical details that determine the system's speed are as follows:

Sampling Rate [1-59]

The 14-channel EEG device used collects hundreds of data packets per second.

- **Speed:** A data flow is generally provided between 128 Hz and 256 Hz (128-256 samples per second).
- **Thermodynamic Equivalent:** This speed is a critical threshold for capturing neuron firing frequencies in the brain and not missing "instantaneous energy changes" in Elmas's model.

Signal Processing and Latency [1-59]

The process of processing brain signals in artificial intelligence and converting them into a command is the most critical "speed" phase of the system.

Processing Time: Algorithms (FFT and Classification) analyze the data in approximately 10 to 50 milliseconds.

Human Perception: The human brain perceives delays below 100 ms as "instantaneous/simultaneous". Elmas's system aims to stay below this threshold, allowing the patient to experience the feeling of "it moved the moment I thought of it".

"Real-Time" Bypass Mechanism [1-59]

If muscle stimulation is performed on patients with SMA or paralysis, the speed is optimized as follows:

- **Signal Bridge:** The command received from the brain is transmitted to the external stimulator (EMS unit) via Bluetooth or RF (Radio Frequency) at a speed close to the speed

of light.

- **Fast Resonance:** Oscillator Synchronization in Elmas's mathematical model aligns the externally applied stimulus with the phase of the brainwave with millisecond precision. This "phase locking" process increases the stability and speed of the system.

4. Processing Power and Optimization
Low-latency processing units are used to enable the system to operate at these speeds. Dr. Elmas typically runs his models with the support of high-speed CPUs and GPUs, allowing for the real-time solution of complex thermodynamic equations. In short: The system is designed to simulate vital reflexes such as swallowing or breathing in an SMA patient without delay (close to the natural nerve conduction speed).

In Dr. Emin Taner Elmas's BCI (Brain-Computer Interface) based system, the patients' adaptation process and the portability of the system are directly linked. This bridge between engineering and medicine optimizes the user experience as follows:

Patient Adaptation Process (Neuro-Plasticity and Learning Speed) [1-59]

The system's operating speed in milliseconds allows the brain to perceive this technology as "part of the body":

- **Instant Feedback:** When a patient thinks of a movement (e.g., raising their arm), the system immediately (under 100 ms) performs it on a screen or stimulator, and the brain quickly accepts this new path (bypass).
- **Neurofeedback:** In Dr. Elmas's method, the patient learns which thought pattern (level of focus) yields more efficient results by seeing the effect of their own brainwaves on the screen. In patients with SMA or stroke, this "mental training" keeps the mental representation of lost motor skills alive.
- **Learning Time:** The user's ability to fully master the system usually begins with a few training sessions (within hours), depending on the individual's ability to focus, and becomes automatic with regular use.

Portability of the System (Mobility and Hardware) [1-59]

Dr. Elmas's work aims to ensure that this technology does not remain confined to the laboratory environment but is integrated into the patient's daily life:

- **Wireless Headsets:** The 14-channel EEG unit used generally transmits data via Bluetooth. This means that the patient can move around (or be transported in a wheelchair) without heavy bundles of cables on their head.
- **Embedded Systems:** Mathematical models and artificial intelligence algorithms are optimized to run on portable computers or special microprocessor boards (such as Raspberry Pi or Jetson Nano) instead of large servers.
- **Wearable Stimulators:** Units that send signals to the muscles (EMS/FES devices) are small, battery-powered, and lightweight modules that can be placed under the patient's clothing.

Practical Benefits of the "Energy-Tronic" Approach [1-59]

The portability of the system also aligns with Elmas's "environmental interaction" principle in the "5th Law of Thermodynamics" theory:

- The system is flexible enough to adapt to different magnetic or physical conditions (temperature, humidity, signal noise) in the patient's home environment.
- **Low Energy Consumption:** Algorithms are coded according to the principle of "maximum work with minimum energy" (exergy optimization) to extend battery life. In conclusion, Dr. Elmas's system aims to give SMA patients independent mobility by transforming their minds into a mobile control center, instead of tying them to a machine that confines them to bed.

The home-use prototypes designed within the scope of the "Applied Medi-Brain Energy-Tronic Treatment Method" developed by Dr. Emin Taner Elmas for SMA and similar neurological diseases are conceived as a wearable and portable ecosystem that reduces dependence on hospitals. The basic features of the home-use prototypes of the system are as follows:

Hardware Components [1-59]

The set designed for home use consists of three main parts that can be integrated into the patient's daily life:

- **Wireless EEG Headset:** Thanks to a 14-channel, lightweight, and Bluetooth-connected headset, neural signals from the patient's scalp are collected without any cable restrictions.
- **Mobile Processing Unit:** A portable control

unit, the size of a laptop or tablet, that processes the collected raw data with Elmas's thermodynamic algorithms.

- **3D Printed Bionic Limbs:** In the prototype phase, bionic hand and arm designs produced on 3D printers using PLA filament are included. These limbs aim to mimic the independent movement of fingers and basic functions such as holding and grasping.

Functional Capacity [1-59]

Tests conducted on a home-type prototype have shown that the system operates in two main areas:

- **Mental Control (Software Interface):** The patient can move a cube on the computer screen or simulate their own facial expressions on a digital character simply by focusing.
- **Physical Triggering (Hardware Interface):** Signals from the brain (thought energy) are transmitted directly to muscles or bionic prostheses, bypassing damaged nerve pathways.

User Advantages [1-59]

- **Accessibility:** The use of 3D printing technology and standard EEG devices aims to reduce the cost of the system and increase its applicability at home.
- **Psychological Impact:** Seeing that the patient can create a physical interaction with their own thought power accelerates the motivation and adaptation process.
- **Independence:** The system functions as an "in-home rehabilitation center" for patients with SMA, ALS, and stroke to perform vital functions such as swallowing, breathing, and hand-arm movements independently.

This method, which is still being developed by Emin Taner ELMAS, is currently in the academic prototype and development phase rather than being a widely commercial product.

Dr. Emin Taner Elmas's "Applied Medical-Brain Energy-Tronic Treatment Method" offers an "electronic bridge" solution for many different neurological diseases where the nerve-muscle transmission pathway is disrupted, not just limited to SMA.

The specific application approaches of this system in diseases such as MPS (Mucopolysaccharidosis),

DMD (Duchenne Muscular Dystrophy), ALS, and MS are as follows:

DMD (Duchenne Muscular Dystrophy) and Muscle Wasting Applications [1-59]

In diseases with progressive muscle wasting such as DMD, the biggest problem is that the signal sent by the brain cannot find a response in the weakened muscle fibers.

- **Signal Amplification:** The system receives the "movement intention" that should go to the patient's weak muscles from the brain via BCI and amplifies it with an external energy source (stimulator) and transmits it directly to the muscle groups.
- **Delaying Muscle Atrophy:** Regularly triggered muscle movements via brain commands aim to slow down the muscle wasting process in DMD patients by preventing muscles from becoming passive.

MPS (Mucopolysaccharidosis) and Metabolic Neurological Involvement [1-59]

In storage diseases such as MPS, substances accumulating in the body can physically suppress nerve transmission or restrict joint movement.

- **Bionic Support:** In cases where joints stiffen (contracture), Elmas's 3D-printed exoskeletons or bionic hand prototypes come into play. The patient can move their physically restricted limb thanks to these robotic supports controlled by brain power.
- **Cognitive Monitoring:** Cognitive impairment seen in some types of MPS can be monitored via an EEG-based BCI system to measure the brain's capacity for focus and reaction.

ALS and Complete Locked-in Cases [1-59]

The most dramatic and vital application of the system is seen in the stages where the patient cannot move at all:

- **Communication Channel:** An ALS patient whose vocal cords and muscles are not functioning can write on the computer screen using only the power of thought, or express their needs through a digital avatar (with facial expression simulations such as smiling and frowning) thanks to the system's software interface.
- **Autonomic Function Support:** Vital functions such as swallowing and coughing reflexes are

supported by throat muscle stimulation triggered via BCI, and the risk of aspiration (fluid entering the lungs) is attempted to be reduced.

Common Mechanism: Thermodynamic Equilibrium [1-59]

In all these diseases, Dr. Elmas's approach is this: Regardless of the disease (genetic, metabolic, or degenerative), the result is "the signal (energy) failing to reach the target."

Systematic Bypass: Instead of intervening in the medical cause of the disease (mutation, protein accumulation, etc.), the system repairs the energy transmission disruption created by this cause using engineering methods (wireless data transfer and stimulation). Dr. Elmas's method requires "personalized frequency adjustment" because each disease and each individual has a different brainwave characteristic (thermodynamic signature).

Conclusion

Dr. Emin Taner Elmas's system transforms traditional physical therapy processes from passive exercise into an active neuro-rehabilitation process. The integration of the system and its impact on quality of life are as follows:

Integration into Physical Therapy Processes [1-59]

In traditional treatment, the physiotherapist moves the patient's muscle externally; however, in this case, the brain is usually in the "observer" position. In Elmas's system, the process works in reverse:

Mind-Muscle Synchronization: The moment the patient thinks about a movement (via BCI), the system stimulates the muscle (Stimulation). This simultaneity triggers the brain to create new neural pathways around the damaged areas (Neuro-plasticity).

Bio-Feedback: The patient instantly sees that they are "focusing correctly" through graphics on the screen or the movement of the bionic arm. This visual evidence can increase the patient's motivation to participate in exercise by 40-60% compared to classical methods.

Precise Dosing: Thanks to Elmas' thermodynamic models, the electrical stimulus sent to the muscle is not "random," but adjusted in real-time according to the muscle's current level of fatigue and resistance (entropy).

Duration of Impact on Quality of Life [1-59]

The effects of the system manifest themselves in different time periods depending on the patient's condition:

- **Immediate Effect (Within Minutes):** From the moment the patient starts using the system, they see that they can move an object on the computer screen or close the bionic hand with just the power of thought. This initiates a tremendous psychological improvement with a feeling of "ability."
- **Short-Term Effect (2-4 Weeks):** With regular use, it can be observed that "dormant" functions such as the swallowing reflex or simple finger movements are triggered in patients with SMA or paralysis.
- **Medium and Long-Term Effect (3-6 Months):** A slowdown in muscle atrophy (wasting) and a reduction in joint stiffness are expected. The patient's ability to perform simple daily tasks (holding a glass, writing with an assistive device) independently improves.

Sustainable Treatment at Home [1-59]

The biggest difference of this system is that instead of the patient going to the hospital for a few hours a week, they can train on their own several times a day with home-based prototypes. This continuity increases the chance of lasting recovery. In short, Dr. Elmas's approach transforms the patient from a "care object" into the "operator" of their own treatment process. This engineering-based "energy management" repairs the lost connections in the patient's nervous system with a technological patch.

Although Dr. Emin Taner Elmas's current work focuses on non-invasive (non-surgical) EEG methods, the mathematical model he developed and his "5th Law of Thermodynamics" theory offer a fully compatible infrastructure for future surgical implants and brain chips (Neuralink, etc.). This compatibility can be detailed in three key points:

Signal Sensitivity and "Data Purity" [1-59]

In the current system, signals received from outside the skull are "noisy" due to bone and skin barriers.

- **Surgical Implant Advantage:** In the future, when a chip is directly implanted into the brain cortex, Elmas's vector energy equations will be fed with much purer and higher-resolution data.

Compatibility: The classification algorithms developed by Elmas can reduce the margin of error to near zero as signal quality improves. This increases the "naturalness" between the patient's thought and the movement of the prosthetic limb.

Two-Way Communication (Haptic Feedback) [1-59]

Future implant technologies will not only send signals out of the brain, but will also transmit sensory data (touch, temperature, pressure) from the outside to the brain.

- **Thermodynamic Equilibrium:** The "energy loop" in Elmas's theory predicts two-way flow. When the pressure data generated when the bionic hand touches an object is transmitted to the brain by Elmas's algorithms, the brain can feel this prosthesis not just as a "tool," but as a real limb.
- **Energy Management:** Implants must operate with very low energy. Elmas's exergy (available energy) optimization models can be a critical guide to conserving the battery life of these chips and preventing heat buildup (entropy) in brain tissue.

Hybrid Systems (EEG + Implant) [1-59]

In the future, it may not be possible for all patients to undergo surgery. Elmas's vision paves the way for hybrid models:

- **Chip for Critical Areas:** Micro-implants are used for vital centers such as breathing or swallowing,
- **EEG for General Movement:** External headgear systems (BCI) can work together for broader motor commands such as hand and arm movements.
- **Software Integration:** Elmas's "Medi-Brain" software can combine data from both the external headgear and the internal chip on a single "energy map". In short,

Emin Taner Elmas's work focuses on deciphering the "language" (energy and signal mathematics) of technology rather than its "hardware" (chip or headgear). Therefore, when chips become standard tomorrow, the algorithms Elmas is writing today could function as the "operating system" of these devices.

"Bionic Prosthetic Robotic Artificial Hand," one of Dr. Emin Taner Elmas's most concrete projects in the field of medical technology, and the software mechanism that controls this system, are design marvels crafted

with engineering precision. Here are the technical details of this system:

3D Printed Bionic Hand Design [1-59]

The design of the bionic hand focuses on both durability and the imitation of biological movement:

- **Material Selection:** The main body of the prosthesis is produced using PLA (Polylactic Acid) filament due to its lightness and ease of processing.
- **Mechanical Movement Transmission:**
- **Servo Motors:** The movement of each finger joint is provided by servo motors that can be controlled independently.
- **Cord System:** The circular movement of the motors is converted into linear movement through special cords connected to the finger joints. This mechanism mimics the working principle of tendons in a human finger.
- **Natural Grip:** Stretching the cords causes the fingers to close, while the reverse movement of the motor causes the fingers to open naturally.
- **Durability Analyses:** Static and Dynamic Load Analyses were performed during the design phase. Material thickness was increased, particularly in load-bearing areas such as finger joints, to prevent damage to the structure from motor torque (rotational force).

Software Interface and Control Mechanisms [1-59]

The software, which acts as the "brain" of the system, has a complex processing pipeline that converts thought into physical movement:

- **BCI (Brain-Computer Interface) Integration:** 14-channel EEG data from the user is decoded in real time by the software.
- **Energy and Force Balance:** The software continuously monitors the electrical energy sent to the servo motors and the mechanical force applied by the motors. This "energy balance" ensures both efficient operation of the system and safe use by preventing overloads.
- **Control Algorithm:**
- **Intention Detection:** The software captures the patient's movement intention (e.g., "grasping") from brain signals.

Error Margin Optimization: The algorithms used filter out electrical noise from the outside world, ensuring that only real movement commands are

transmitted to the motor.

- **Visual Simulation:** The software interface not only controls the physical hand but also presents a digital model on the computer screen that moves in sync with the patient's thoughts. This helps the patient learn the system faster by receiving visual feedback.

Dr. Elmas's work continues to be developed at the academic prototype level within Iğdır University, specifically with the aim of improving the quality of life for patients with SMA, ALS, and stroke.

Biography of Author:

Asst. Prof. Dr. Dipl.-Ing. Emin Taner ELMAS



Asst.Prof. Dr. Emin Taner ELMAS is a Mechanical Engineer having degrees of B.Sc., M.Sc., Ph.D., and was born in Sivas in 1974. He completed his doctorate at Ege University, Graduate School of Natural and Applied Sciences, Mechanical Engineering Department, Thermodynamics Science Branch, and his master's degree at Dokuz Eylül University, Mechanical Engineering Department, Energy Science Branch. He also completed his undergraduate education at Hacettepe University, ZEF, Mechanical Engineering Department and graduated from the faculty with honors in 1995 and became a mechanical engineer. He was awarded a non-refundable scholarship by the Turkish Chamber of Mechanical Engineers in his 4th year because he was the most successful student during his first 3 classes study at the faculty. He graduated from İzmir Atatürk High School in 1991.

Asst. Prof. Dr. ELMAS has completed his military service as a NATO Officer in Bosnia and Herzegovina. He was a "Reserved Officer" as a "2nd Lieutenant" as an "English-Turkish Interpreter". He was also a "Guard Commander" and served in Sarajevo, Camp Butmir within the SFOR task force of NATO. He

has been awarded with 2 (two) NATO Medals and Turkish Armed Forces Service Certificate of Pride (Bosnia & Herzegovina).

In addition to his academic duties at universities, he has worked as an engineer and manager in various industrial institutions, organizations and companies; He has served as Construction Site Manager, Project Manager, Management Representative, Quality Manager, Production Manager, Energy Manager, CSO-CTO, CBDO, Factory Manager, Deputy General Manager and General Manager.

Asst. Prof. Dr. Elmas is Department Head and is an Assistant Professor of Automotive Technology at the Department of Motor Vehicles and Transportation Technologies at Vocational School of Higher Education for Technical Sciences at IĞDIR UNIVERSITY, Turkey. He is also an Assistant Professor of Bioengineering & BioSciences at the same university. He has nearly 30 years of total experience in academia and in industry.

He has served as a scientific referee and panelist for ASME, TUBITAK and many scientific institutions, organizations and universities, including NASA.

He has published numerous international and national academic scientific articles, books, and book chapters, and serves as an editor for international academic journals. He also serves on the scientific committees of many international conferences, publishing conference and congress proceedings and giving presentations.

“Mechanical Engineering, Energy Transfer, Thermodynamics, Fluid Mechanics, Heat Transfer, Higher Mathematics, Evaporation, Heat Pipes, Space Sciences, Automotive, Bioengineering, Medical Engineering Applications, Neuroengineering, Medical Technique” are his academic and scientific fields of study; “Heating-Ventilation Air Conditioning Applications, Pressure Vessels, Heat Exchangers, Energy Efficiency, Steam Boilers, Power Plants, Cogeneration, Water Purification, Water Treatment, Industrial Equipment and Machinery, Welding Manufacturing, Sheet Metal Forming, Machining” are his industrial experience fields.

As of 2026, he has been awarded the Nobel Scientist

Award by the international platform organization Scientific Laurels.

Asst. Prof. Dr. Emin Taner ELMAS is also a musician, saz (baglama) virtuoso player and ney (Nay, Turkish Reed Flute) performer. He plays also cümbüş instrument and performs darbuka rhythm instrument. He has a YouTube Music Channel (Emin Taner ELMAS) which includes some of his sound recordings of him playing the saz-baglama and blowing the ney. He composed the poem written by the great poet Âşık Veysel ŞATIROĞLU under the name of “Raşit Bey” in memory of his father Judge (Hâkim) Raşit ELMAS as “Raşit Bey Türküsü”, wrote it down, notated and published it as an academic article and broadcasted this song on his own music channel. He wrote the poems entitled “Canım Babam” and “Geldim Babam” which he wrote also in memory of his father and published in an academic literature journal, and composed instrumental musics for these poems. He also composed an instrumental song called “Annem Annem Türküsü” and gave it to his mother, Lawyer Tuna ELMAS, as a gift on Mother’s Day, 11.05.2025. He also has a poem titled "Ney and Neyzen." He also wrote and presented a poem titled "Esra Kardeşim" to his sister, Esra ELMAS, an archaeologist and English teacher. He has published books including "Saz-Bağlama Tuning System Method" (“Saz-Bağlama Akort Sistemi Metodu”) and "Ney and Neyzen; Ney's Pitches, Frets, Sound Stages, Octaves, Structure, Performance, Ney Maintenance and Basic Music Theory" (Ney ve Neyzen; Ney’de Perdeler, Ses Devreleri, Oktavlar, Yapısı, İcrası, Ney Bakımı ile Temel Musiki Nazariyatı) and My Collection of Literary and Musical Art Works – I Story / Anecdote / Essay / Poetry / Verse / Prose / Humorous; witty - satirical; poetic stories / Lyrics / Composition (Edebiyat ve Musiki Sanat Eserleri Külliyyatım – I Hikâye / Anekdot / Deneme / Şiir / Manzume / Nesir / Mizahi; nükteli – hicivli; şiirsel hikâyeler / Güfte / Beste). He continues his artistic studies by writing various articles, books, poetry, lyrics and also realizing musical composition and repertoire works.

References

1. Elmas ET (2020) ELMAS’s Theory of Thermodynamics: A Scientific Approach for 5th Law of Thermodynamics – A Theoretical Application Example for Medical Thermodynamics. Op Acc J Bio Sci & Res 2.

2. Elmas ET (2024) Medical Treatment Method of Alzheimer's Disease & Parkinson's Disease by the Help of the Natural Musical Sound of Nây-ı Şerif, Instrument of Ney (Ney: Turkish Reed Flute, Nay). *IJCMCR* 42: 004.
3. Elmas ET (2020) Medical Treatment Method of "Bio-robotic Resonance and Thermodynamical Interaction" with Analogy of "Frequency – Resonance Setting Formation" on the Application of "Algorithm for Smart Drugs Controlled by a Bio-robotic System" developed for the "Treatment of Covid-19, Coronavirus and Virus Infections". *Op Acc J Bio Sci & Res* 1: 1.
4. Elmas ET (2020) Scope of Applications for Medical Technique at Science and Engineering. *Op Acc J Bio Sci & Res* 1: 1.
5. Elmas ET (2024) System Design and Development of a Novel Unique Neuro-Physical Medical Treatment Method for SMA-Spinal Muscular Atrophia Disease and for Similar Neurological Muscle Diseases. *Herculean Res* 4: 90-97.
6. Daş F, Elmas ET, Bucak İÖ (2024) Innovative Use of Machine Learning-Aided Virtual Reality and Natural Language Processing Technologies in Dyslexia Diagnosis and Treatment Phases. *Digital Frontiers - Healthcare, Education, and Society in the Metaverse Era*. <https://www.intechopen.com/chapters/1190685>.
7. Elmas ET (2024) Design of Bionic Eye and Artificial Vision System: A Unique Project "Mobile Bio-Eye-Tronic System". *Herculean Res* 4: 97-100.
8. Elmas ET (2024) Project for "Amphibious Mobile Snow Track Ambulance" for Healthcare System. *Am J Biomed Sci & Res* 22.
9. Elmas ET, Bucak İÖ (2023) Modeling and Simulation of Smart-Drug Algorithms Through Frequency Modulation for the Treatment of Covid-19 and Similar Viruses. *Global Journal of Research in Medical Sciences* 3: 1-6.
10. Elmas ET, Bucak İÖ (2024) FM Modulated Smart Drug Algorithm for the Treatment of Cancer Cells. *Global Journal of Research in Medical Sciences* 4: 1-6.
11. Elmas ET (2023) Prototype Design, Production and Functioning of a Portable (Movable), Home-Type (Domestical) Hemodialysis Machine (Unit). *Global Journal of Research in Medical Sciences* 3: 11-12.
12. Elmas ET (2019) Thermodynamical Balance Associated with Energy Transfer Analysis of the Universe Space as a Pressure Vessel Analogy. *Journal of Applied Sciences RDAPS-10002*.
13. Elmas ET (2017) Prospective Characteristics of Contemporary Engineer (By the Approach of Mechanical Engineering): Contribution and Role of the Mechanical Engineer to the Organization Management and Productivity. *Productivity and Organizational Management*.
14. Elmas ET (2017) Prospective Characteristics of Contemporary Engineer (By the Approach of Mechanical Engineering): Contribution and Role of the Mechanical Engineer to the Organization Management and Productivity. *DeGruyter*.
15. Elmas ET (2024) Design of Bio-Artificial Liver Organ. *J Biomed Sci Biotech Res* 2: 1-4.
16. Elmas ET (2024) Design of Bionic Ear-Cochlear Implant and Artificial Hearing System: A Unique Project "Mobile Bio-Ear-Tronic System". *Global Journal of Research in Medical Sciences* 4.
17. Elmas ET (2014) Çağımızın Mühendisinden Beklenenler. *Gece Kitaplığı*.
18. Elmas ET, Oğul L (2025) The Effects of Medicine and Music Therapy Practices on Human Health. *IJCMCR* 50: 003.
19. Elmas ET, Servet K (2025) Biomechanical Analysis of Transtibial Prosthesis Designed for Runners. *Biomedical and Clinical Research Journal* 1.
20. Elmas ET, Oruç Y (2026) A Novel Mobile Bio-Eye-Tronic System Based on the Elmas's Thermodynamic Theory for Cataract Disease. *Studies in Science of Science* 44.
21. Elmas ET, Cinibulak MA (2025) Fundamental Scientific and Technical Issues Related with the "Hip Replacement Design and Biomechanical Analysis". *Journal of Material Science and Nanotechnology*.
22. Elmas ET, Kunduracioğlu I (2025) A Model for Second Law of Thermodynamics, Relationship between Health, Disease, Aging, Death Processes and Consciousness, Nervous System and Time. *Global Journal of Research in Medical Sciences* 5: 1-6.
23. Elmas ET, Kunduracioğlu I (2025) Metabolic Heat Production with Energy Transfer and Laws of Human Thermodynamics: The Energy Balance of the Human Body. *Global Journal of Research*

- in Medical Sciences 5: 7-14.
24. Elmas ET, Kunduracıoğlu I (2025) Artificial Heart Design and Biomechanical Analysis. *Open Access Journal of Medicine and Healthcare* 1: 01-06.
 25. Elmas ET, Kunduracıoğlu I (2025) Fundamentals of Human Vision System. *Global Journal of Research in Medical Sciences* 5: 103-117.
 26. Elmas ET (2025) Kitchen Hood Design & Manufacturing Project 3D Modeling, Engineering Calculations, and Technical Drawings for Iğdir University Medico Social Building Dining Hall. *Journal of Material Science and Nanotechnology* 1: 102.
 27. Elmas ET, Kunduracıoğlu I (2025) Signal Transduction System in Neurons. *International Journal of Research in Medical and Clinical Sciences* 3: 26-35.
 28. Elmas ET, Kunduracıoğlu I (2025) An Introduction to Sound and Sound Perception System for Human Ear. *International Journal of Research in Medical and Clinical Sciences* 3: 36-49.
 29. Elmas ET, Kunduracıoğlu I (2025) Medical Structure of the Human Respiratory System. *International Journal of Research in Medical and Clinical Sciences* 3: 50-63.
 30. Elmas ET, Kunduracıoğlu I (2025) Medical Structure and Hemodynamics of the Human Circulatory System. *International Journal of Research in Medical and Clinical Sciences* 3: 64-81.
 31. Elmas ET (2025) Prosthetics, Artificial Limbs, Implants and Their Biomedical Applications. *J Surg* 10: 11365.
 32. Elmas ET (2025) An Introduction to Electrophysical Properties of the Human Heart. *J Surg* 10: 11364.
 33. Elmas ET (2025) A Brief Information about Cataract Operation. *European Journal of Science and Modern Technologies* 1: 61-66
 34. Elmas ET (2025) A Brief Information about Blood Sugar and Diabetes Management. *ICON Journal of Applied Medical Sciences* 1: 1-5.
 35. Elmas ET, Kunduracıoğlu I (2025) An Introduction to the Medical Body Mechanics and Human Muscles. *Journal of Medical and Clinical Case Reports* 2.
 36. Elmas ET, K I (2025) Elastomechanics Fundamentals for Bones and Fractures. *Ann Biotech & Biomed Sci* 1: 1-12.
 37. Elmas ET, Oruç Y (2025) An Alternative Non-Surgical Cataract Treatment Method in Medicine and Ophthalmology: “Medi-Ultrasound Eye-Tronic Method”. *Universal Library of Medical and Health Sciences* 3: 01-07.
 38. Elmas ET (2024) System Design and Development of a Novel Unique Neuro-Physical Medical Treatment Method for SMA-Spinal Muscular Atrophy Disease and for Similar Neurological Muscle Diseases. *Collect J Neurol* 1.
 39. Elmas ET (2024) Design of Bionic Eye and Artificial Vision System: A Unique Project “Mobile Bio-EyeTronic System”. *Collect J Robotics AI* 1.
 40. Elmas ET (2025) Prospective Characteristics of Contemporary Engineer (By the Approach of Mechanical Engineering): Contribution and Role of the Mechanical Engineer to the Organization Management and Productivity. *Productivity and Organizational Management*. https://www.oreilly.com/library/view/productivity-and-organizational/9783110386615/content/16_chapter07.xhtml.
 41. Elmas ET (2025) Prospective Characteristics of Contemporary Engineer (By the Approach of Mechanical Engineering): Contribution and Role of the Mechanical Engineer to the Organization Management and Productivity. *DeGruyter* <https://www.degruyterbrill.com/document/doi/10.1515/9783112206775-008/>
 42. Elmas ET, Şimşek M (2025) Bionic Prosthetic Robotic Artificial Hand Design and Biomechanics Analysis. *Journal of Medical Discoveries* 2.
 43. Elmas ET, Kaya S (2025) The Effect of Eye and Vision on the Body’s Balance System. *Biomed J Sci & Tech Res* 61.
 44. Elmas ET, Şimşek M (2025) A Novel Unique Neuro-Physical Medical Treatment Method for SMA–Spinal Muscular Atrophy Disease, Paralyzed Patients, ALS Patients, MPS, SSPE, DMD Patients and for Similar Neurological Muscle Diseases. *Universal Library of Medical and Health Sciences* 3: 32-52.
 45. Elmas ET (2026) Thermodynamic and Mathematical Model of Human Brain for Neurodegenerative Diseases: Alzheimer's Disease (AD), Parkinson's Disease (PD) and Amyotrophic Lateral Sclerosis (ALS). *International Journal of Science, Engineering and Technology* 14.

46. Elmas ET (2026) Thermodynamic Analysis of Alzheimer's Disease and Related Neurodegenerative Disorders with Musical Sound Frequency Applications. Gongcheng Kexue Xuebao 11.
47. Elmas ET (2025) Applied Medi-Brain Energy-Tronic Treatment Method for the Medical Treatments of SMA–Spinal Muscular Atrophy Disease and Related Conditions with Biomechanical Analysis. Journal of Engineering and Applied Sciences Technology.
48. Elmas ET (2026) Scientific and Technical Introduction to “Applied Medi-Brain Energy-Tronic Treatment Method” for Neurological Diseases. J Psychol Neurosci 8: 1-19,
49. Elmas ET (2026) Thermodynamics and Energy Transfer in Medicine Applications with Archaeomusicology and Music Therapy. Studies in Science of Science 44.
50. Elmas ET, Dağ I (2026) Thermodynamic Analysis of Alzheimer's Disease and Related Neurodegenerative Disorders with Musical Frequency Treatment Approach. Studies in Science of Science 44.
51. Elmas ET (2026) Evaluation and Analysis of Medical Technique Application Areas in Science and Engineering in Terms of Turkish Economy. Journal of Xidian University 20.
52. Elmas ET (2026) Thermodynamic Energy Transfer Modeling of Neurodegeneration with the ELMAS's Theory of Thermodynamics. Research Paper 8: 1-22.
53. Elmas ET (2026) Thermodynamic Analysis of Neurodegenerative Diseases and Music-Based Treatment Approach. Makine Mühendisliğinde Yeni Nesil Teknolojiler.
54. Elmas ET (2026) Mathematical Model and Clinical Observations for Neurodegenerative Diseases with Music-Based Treatment. Makine Mühendisliğinde Yeni Nesil Teknolojiler.
55. Elmas ET (2026) Multifaceted Holistic Medical Health Engineering Combined with Science and Art. International Journal of Research in Medical and Clinical Sciences 4: 91-102.
56. Elmas ET (2026) Bilim ve Sanat ile Çok Yönlü Bütüncül Yaklaşım. Vizetek Yayıncılık. https://vizetek.com.tr/tum-urunler?srsltid=AfmBOorjOxXalcm_AjkkA10Dhjn7Oy4K7JsCP2IFkJtuqIL2iF_ZME7s.
57. Elmas ET, Kunduracıoğlu I (2025) General Aspects of Advanced Biomechanics. Biomed J Sci & Tech Res 61.
58. Elmas ET, Kunduracıoğlu I (2025) Conservation Laws and the Main Physical Parameters for Advanced Biomechanics. Biomed J Sci & Tech Res 61.
59. Elmas ET, Şimşek M (2025) Bionic Prosthetic Robotic Artificial Hand Design and Biomechanics Analysis. Journal of Medical Discoveries 2.