Effect of Taheri Consciousness Bond Field on the Structure and Properties of Aluminum

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ABSTRACT

The properties and structure of aluminum in various known fields have been already studied. The aim of this study was to investigate the behavior and properties of unalloyed aluminum under the influence of the Consciousness Bond Field. Consciousness Bond Field is one of many Taheri Consciousness Fields (TCFs) that were founded and introduced by Mohammad Ali Taheri as new Fields more than four decades ago. These Fields are neither material nor energetic. Therefore, they do not have the quantity, but they have direct effects on both matter and energy. In other words, although TCFs cannot be directly measured, we can investigate their effects indirectly through various reproducible experiments. The present study is an attempt to examine this theory. In this research, aluminum metal has been used as a sample. Nine aluminum samples were cast under the same conditions and divided into three equal groups. Two groups were put under the influence of TCFs, and the third group was considered the control group. In order to study the effect of TCFs, the structure and properties of the metal samples were investigated. X-ray diffraction (XRD) analysis test was performed for structural analysis of aluminum samples. In terms of properties, Brinell hardness tests, electrical conductivity determination, and corrosion resistance tests were performed using the potentiodynamic method. Changes in the structure of the samples were observed. The TCF has increased lattice strain, twin defects, and intrinsic defects and reduced the size of crystalline areas and extrinsic defects.

Keywords: Concrete, Taheri Consciousness Fields, Consciousness Bond Field, Alkaline reaction

INTRODUCTION

Scientific understanding of the nature of matter began in the early twentieth century, and since then significant advances have been made in this field. Understanding the law of conservation of mass and energy, recognizing fundamental particles, quantum view of these particles, and relativistic view of the universe have been among the achievements of this scientific movement. The question can be raised whether our fundamental understanding of the nature of matter and the universe is fully developed and whether further research should continue only based on existing science or if it is possible to open a fundamentally new look at matter and the universe. There has already been debate about Cosmic Intelligence, and attempts have been made to explain it in the world of science. One of the concepts related to Cosmic Intelligence is black holes [1]. It seems that most of the discussions on "cosmic intelligence" have been philosophical and argumentative, and based on common sense, and there is a lack of empirical or computational studies in this regard. It should be noted that intelligence in this context refers to the presentation of new theories that provide a more general understanding of existence and can be examined and verified by scientific methods.

The nature of consciousness and its place in science has received much attention in the current century. Many philosophical and scientific theories have been proposed in this area. In the1980s, Mohammad Ali Taheri introduced novel fields with a non-material/non-energetic nature named Taheri Consciousness Fields (TCFs). In this perspective, T-Consciousness is one of the three existing elements of the universe apart from matter and energy. According to this theory, there are various TCFs with different functions, which are the subcategories of a networked universal internet called the Cosmic Consciousness Network (CCN). The major difference between the theory of TCFs and other theoretical concepts about consciousness is related to the practical application of the TCFs. TCFs can be applied to all living and non-living creatures, including plants, animals, microorganisms, materials, etc.

Mohammad Ali Taheri, the founder of Erfan Keyhani Halqeh, a school of thought, introduced a new science in 2020 as a branch of this school. He coined the term Sciencefact for this new science because it utilizes scientific investigations to prove the existence of T-Consciousness as an irrefutable phenomenon and a fact. Although science focuses solely on the study of matter and energy and Sciencefact, by contrast, explores the effects of the [non-material/non-energetic] TCFs, Sciencefact has provided a common ground between the two by conducting reproducible laboratory experiments in various scientific fields, and it has used the scientific approach in proving TCFs.

The influence of the TCFs begins with the Connection between CCN as the Whole Taheri Consciousness of the universe and the subjects of study as a part. This Connection called "Ettesal" is established by a certified and trained individual who has been entrusted with the TCFs. The human mind has an intermediary role (Announcer) which plays a part by fleeting attention to the subject of study and then the main achievement obtained as a result of the effects of the TCFs. These Fields cannot be directly measured by science, but it is possible to investigate their effects on various subjects through reproducible laboratory experiments.

The research methodology in the study of T-Consciousness has been founded on the process of Assumption, Argument, and Proof, in which the basic Assumption is: The Cosmos was formed by a third element called T-Con-

sciousness that is different from matter and energy.

The Argument: The existence of TCFs can be demonstrated by its effects on matter and energy (e.g., humans, animals, plants, microorganisms, cells, materials, etc.)

The Proof: is the scientific verification of the effects of TCFs on matter and energy (according to the Argument) through various reproducible scientific experiments.

Accordingly, to investigate and verify the existence, effects, and mechanisms of TCFs, the following five research phases (Phases 0 through 4), and the aims of each phase are outlined below.

Phase-0 studies aim to prove the existence of TCFs by observing their effects. The nature of T-Consciousness and what it is will not be addressed in this phase. Phase-1 explores the varied effects of different TCFs. Phase-2 examines the reason behind the varied effects of these fields. Phase-3 investigates the mechanism of TCFs effects on matter and energy. Finally, Phase-4 draws significant conclusions, particularly with regard to the mind and memory of matter and their relation to the T-Consciousness, etc. [2-5]

Aluminum with the highest abundance in the earth's crust after silicon is one of the strategic metals that are the most used after steel. It has many applications in almost all industries. Any change in the position of atoms is directly related to the properties and application of this material [6]. While "Consciousness Bond Field" as a variable TCFs influences materials, it is expected that pure materials, which are not composed of different chemical compounds and alloys, still have stable behavior under the influence of TCF.

According to the theory of TCFs, T-Consciousness can be converted into matter and energy, so in re-cooling, a change in the crystalline lattice of atoms is probable. The present study examines the mentioned cases.

Methodology

Melted Aluminum made from AA1XXX series aluminum ingots was cast in nine uniform molds (Cylinders with a diameter of 3 cm and height of 1cm). Samples were arbitrarily named by those doing the experiment. Two groups of samples were under TCF, and one group of the samples was considered the control. According to Table (1), the groups under TCF were identified as X1 and X2 and the control group was identified as Control. Each group consisted of three samples coded with numbers (1 to 9). Then, to apply TCF, the names of the first and second series were, declared to the second author of this article.

Table 1 . Grouping of 9 cast aluminum samples

Group Name	X1			X2			Control		
Sample Number	1	2	3	4	5	6	7	8	9

Application of Taheri Consciousness Fields

One of the introduced TCFs is called the Consciousness Bond Field and was applied to the samples according to the protocols regulated by the COSMOintel research center (www.COSMOintel.com). A request for Connection to the CCN to utilize TCFs can be placed through the COSMOintel website in the "Assign Announcement" section. This access is available for everyone at no cost. In order to study and experience this Connection, the researchers can register on the website

at any time in order to report the experiment to the COSMOintel research center. Certain details of the experiment must be provided to the center; for example, the characteristics or number and name of samples and controls must be specified. This entire experiment was carried out as a double-blind method where lab technicians were completely unaware of the TCFs.

All samples were cast from one molten pot. Samples 1, 4, and 7 samples 2, 5, and 8, and samples 3, 6, and 9 were cast simultaneously to uniformly distribute any possible error. Then, chemical analysis was performed on the samples to investigate any possibility of unwanted impurities and their effect on the properties. For this purpose, a sample from each series was randomly selected and subjected to spectrochemical analysis [7]; the results of which are given in Table (2). The result shows that the composition of the samples is in the same category and there is no difference in the composition in a way that can significantly affect the properties.

Table 2 . Chemical composition of cast samples (one random sample from each group)

One random sample of the group X1

Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Be	Ca	Li
0.06	0.11	0.01	0.009	0.002	0.002	0.01	0.02	Trace	Trace	Trace	Trace
Pb	Sn	Sr	V	Na	Bi	Co	Zr	B	Ga	Cd	Al
0.01	< 0.005	Trace	0.008	0.005	0.01	0.02	Trace	0.0015	0.005	0.005	99.75

One random sample of the group X2

Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Be	Ca	Li
0.06	0.11	0.02	0.009	0.002	0.004	0.01	0.02	Trace	Trace	Trace	Trace
Pb	Sn	Sr	V	Na	Bi	Co	Zr	B	Ga	Cd	Al
0.01	< 0.005	Trace	0.008	0.005	0.01	0.01	Trace	0.0022	0.004	0.004	99.75

One random sample of the control group

Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Be	Ca	Li
0.06	0.11	0.01	0.009	Trace	0.005	0.01	0.02	Trace	Trace	Trace	Trace
Pb	Sn	Sr	V	Na	Bi	Co	Zr	B	Ga	Cd	Al
0.01	< 0.005	Trace	0.009	0.004	0.02	0.01	Trace	0.0022	0.004	0.004	99.75

Some of the main properties of aluminum metal are high electrical conductivity, softness, and ductility as well as relatively good corrosion resistance at medium pH. Therefore, these properties were compared in the control samples and those under TCF.

Brinell hardness test was performed under ASTM E10 (2018) standard [8]. A constant load of 31.25 Kg for the specified time of 10 – 15 seconds was applied using a 2.5mm diameter tungsten carbide ball. The test was performed at three points on each sample and its location was the core of the sample [8].

Also, the electrical conductivity test was performed according to ASTM E1004 (2017) [9]; and the electrical specific resistance was determined by reversing the specific conductivity. Corrosion behavior was also investigated by potentiodynamic polarization test according to ASTM G1-03 (Re.17) & ASTM G3-14 standards [9]. For this purpose, 3.5% NaCl solution, which is a common medium in corrosion tests, was used. The Ag / AgCl reference electrode and the scanning rate of 0.5 mV / S were used at ambient temperature. The samples were immersed in the solution for 60 minutes before the test. Samples 1, 4, 7, samples 2, 5, 8, and samples 3, 6, and 9 were tested simultaneously.

Crystalline structure and lattice defects of atoms investigated by X-ray diffraction (XRD). The tests were performed with a copper anode at a voltage of 30 mA and a current of 40 kV. Step size was 0.05 ° and counting time per step was 0.5 sec. Structure analysis was performed by the Rietveld refinement method using Maud software [10].

Results and discussion

Hardness test

The results of the Brinell hardness test are shown in Table (3). The hardness of each sample was determined by averaging three points. Then, using the hardness of each sample, the mean and standard deviation of the results in each series were determined (Figure 1). The average hardness in the X1 group is less than the control group but in the X2 group is slightly higher than the control group, so they are not in the same direction. On the other hand, there is a common dispersion of results in all-metal hardness tests and the difference between the obtained data is not large enough to be considered a significant change.

Table 3 . Brinell hardness test results of 9 aluminum samples

Name	Sample Code	Point 1	Point 2	Point 3	Mean	Mean of Each Series	Standard Deviation
Group X1 (TCF)	1	21	20	21	20.67	20.56	0.16
	2	20	21	20	20.33		
	3	21	20	21	20.67		
Group X2 (TCF)	4	23	22	23	22.67	21.67	0.82
	5	21	20	21	20.67		
	6	22	21	22	21.67		
Control Group	7	22	21	21	21.33	21.44	0.68
	8	21	20	21	20.67		
	9	23	22	22	22.33		

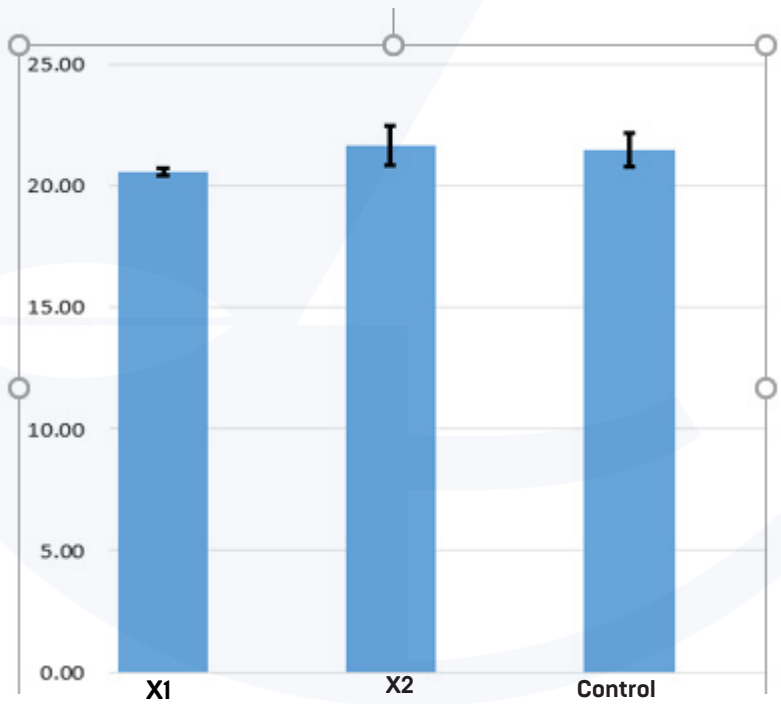


Figure 1. Mean values and standard deviation of hardness in three groups

Electrical conductivity

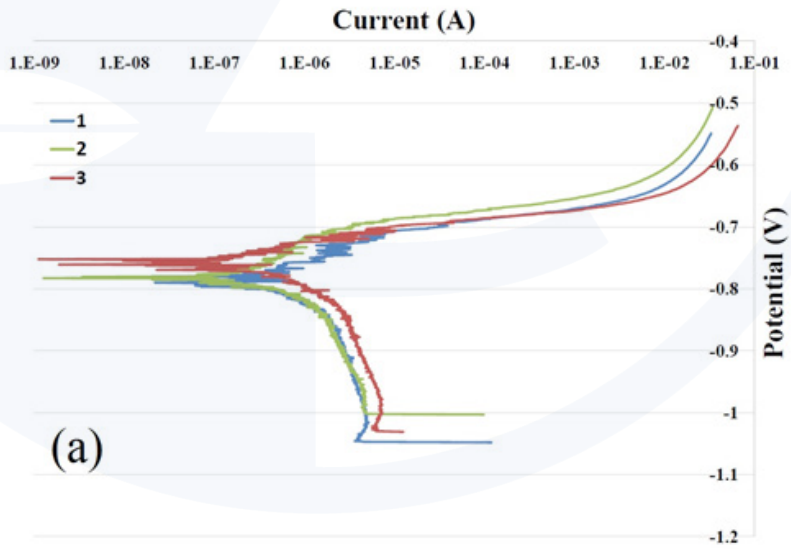
The results of the conductivity test and the calculation of electrical resistance are shown in Table (4). It can be seen that the results are the same for all samples, so in the measurement accuracy range, no difference in this property was observed between the samples. Unalloyed aluminum is almost exclusively used for electrical applications, and electrical conductivity is one of the properties of this aluminum series [11].

Table 4 . Results of specific resistivity test (10-8Ω m)

Name	Sample Code	Specific Resistivity (10^{-8} Ω.m)	Electrical Conductivity (10^{7} S/m)	Electrical Conductivity (%IACS)
	1	2.87	3.48	60±0.5
Group X1(TCF)	2	2.87	3.48	60±0.5
	3	2.87	3.48	60±0.5
	4	2.87	3.48	60±0.5
Group X2(TCF)	5	2.87	3.48	60±0.5
	6	2.87	3.48	60±0.5
	7	2.87	3.48	60±0.5
Control Group	8	2.87	3.48	60±0.5
	9	2.87	3.48	60±0.5

Corrosion resistance

The diagrams for the nine samples are shown in (Figure 2). The formation of a small surface area has been seen in the samples which, after some fluctuations in current, disappeared and the intensity of the current increased rapidly (approximately horizontal line in the graph equivalent to critical pitting potential or Epit). After some corrosion, a layer of aluminum oxide was formed, and the graph tends to be vertical. This is a common process in aluminum corrosion testing [11].



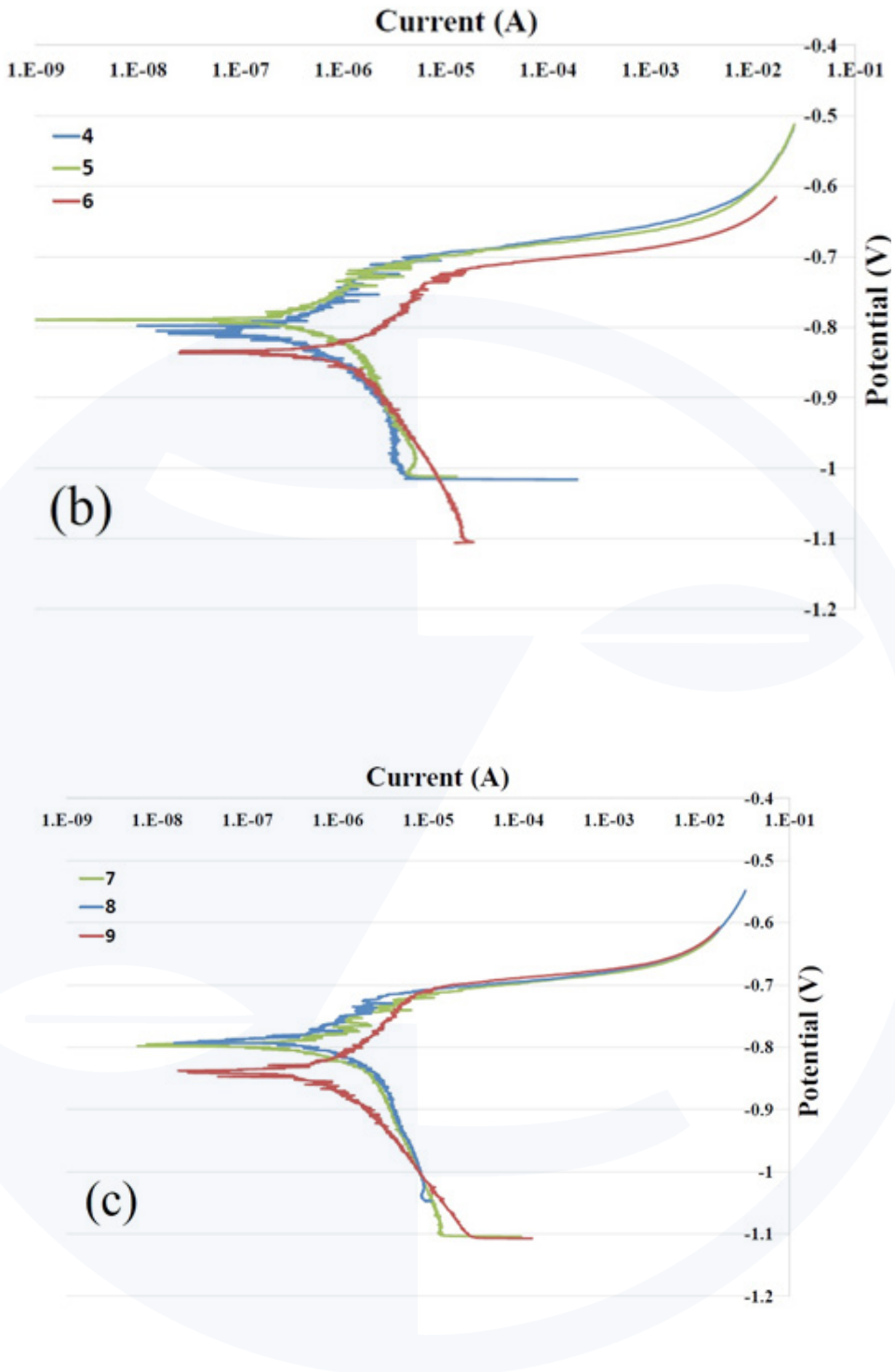


Figure 2. Potentiodynamic polarization curves for three groups of samples (a): XI, (b): X2, (C): Control

In order to compare the corrosion intensity in three groups of samples, the corrosion current intensity parameter can be used. High corrosion resistance in this test is demonstrated as low corrosion current intensity and low corrosion rate. The values extracted from the graphs are given in Table (5). Also, the mean values and standard deviation of corrosion potential (Ecorr) and the corrosion current density (icorr) for each sample are shown in

Table (6). The average intensity of corrosion current in the two groups under influence of TCF is lower than the control group, indicating better corrosion resistance. The results of the corrosion test are numerical and there is an inherent variation in the results. Therefore, it is important to check if the changes are statistically significant.

Table 5 . Results of Potentiodynamic corrosion test of 9 aluminum samples in 3.5% NaCl medium

Name	Sample Code	Corrosion Current Intensity i_{corr} ($\mu A/cm^2$)	Corrosion Potential E_{corr} (mV)	Corrosion Rate mpy (mm/year)
Group X1 (TCF)	1	0.593	-772.52	0.253 (6.43E-3)
	2	0.337	-773.149	0.144 (3.66E-3)
	3	0.597	-826.191	0.255 (6.48E-3)
Group X2 (TCF)	4	0.376	-801.837	0.161 (4.08E-3)
	5	0.498	-784.754	0.213 (5.40E-3)
	6	0.877	-835.944	0.375 (9.5E-3)
Control Group	7	0.877	-785.809	(9.52E-3) 0.375
	8	0.597	-780.926	(6.47E-3) 0.255
	9	0.566	-843.362	(6.13E-3) 0.242

Table 6 . Average of current intensities and corrosion potentials, along with standard deviation

Name	Current Intensity Mean i_{corr} ($\mu A/cm^2$)	Standard Deviation	Change from Control (%)	Potential Mean E_{corr} (mV)	Standard Deviation	Change from Control (%)
Group X1 (TCF)	0.509	0.121	-0.25%	-790.62	25.15	-1.5%
Group X2 (TCF)	0.584	0.213	-14%	-807.51	21.28	-0.5%
Control group	0.680	0.140		-803.36	28.35	

Aluminum metal is prone to various corrosions, including Pitting Corrosion [12-13], Exfoliation Corrosion [14], Stress Corrosion [15], Filiform Corrosion [16], Water Line Corrosion [11], Crevice Corrosion [17], Cavitation [11], Erosion [18], Microbiological Corrosion [19], Transgranular and Intergranular (Intercrystalline) Corrosion [20].

Each series of aluminum alloys is more prone to a certain type of corrosion. The (1000-series) aluminum used in this study is susceptible to intercrystalline corrosion. This corrosion is not visible to the naked eye and spreads at the border of grains and crystals. It is effective in changing the mechanical properties and the possibility of rupture. In water at a temperature above 60–70°C, the sensitivity to intercrystalline corrosion increases with the increasing purity of the metal.

To study this change, it is necessary to design more complete experiments to intensify the environment and more accurate equipment [20,11]. However, in the routine standard examination in this experiment, we see

small changes in the corrosion process. The (1000-series) aluminum is inherently resistant to this type of (tested) corrosion.

Microstructure analysis by XRD method

In order to investigate the effect of TCF on the structure of matter in atomic dimensions, the effects of a type of TCF on the structure of aluminum were evaluated using the XRD method. Crystalline lattice information such as lattice parameter, size of crystalline areas, Lattice strain, and the possibility of some crystalline defects that can be examined by XRD analysis have specific effects on the behavior of materials [21-28].

Parameters related to the crystalline structure of aluminum samples and mean values of the three groups and their standard deviation for each group were calculated (Table 7).

Table 7 . Parameters related to the crystalline structure of aluminum samples

	X1(TCF)								
	1	**Std.Dev.**	**2**	**Std.Dev.**	**3**	**Std.Dev.**	**Average**	**Std.Dev.**	**%**
Lattice Parameter	**4.0503**	5.82E-05	**4.0504**	6.31E-05	**4.0511**	3.64E-05	4.0506	3.30E-04	0.0%
crystallite size	**2764.85**	212.70	**1733.82**	85.67	**1733.18**	64.11	2077.28	4.86E+02	-13.3%
Microstrain	**3.01E-04**	1.26E-05	**2.76E-04**	1.64E-05	**4.59E-04**	1.77E-05	3.45E-04	8.11E-05	27.6%
Intrinsic	2.22E-06		1.23E-11		3.61E-06		1.94E-06	1.49E-06	23.2×10^{3}%
Extrinsic	1.19E-06		1.01E-11		5.23E-05		1.78E-05	2.44E-05	-61.1%
Twin defect	1.65E-06		2.27E-12		9.94E-06		3.86E-06	4.35E-06	47.1×10^{3}%
	X2(TCF)								
	4	**Std.Dev.**	**5**	**Std.Dev.**	**6**	**Std.Dev.**	**Average**	**Std.Dev.**	**%**
Lattice Parameter	**4.0496**	7.01E-05	**4.0399**	7.29E-05	**4.0503**	4.89E-05	4.0466	4.76E-03	-0.1%
crystallite size	**1682.66**	0.72	**1648.96**	0.46	**2810.63**	201.59	2047.42	5.40E+02	-14.5%
Microstrain	2.92E-04	1.66E-05	**4.83E-04**	4.22E-06	**2.06E-04**	1.53E-05	3.27E-04	1.16E-04	20.9%
Intrinsic	8.07E-07		2.26E-05		1.49E-10		7.80E-06	1.05E-05	93.5×10^{3}%
Extrinsic	1.16E-07		1.13E-04		6.92E-07		3.79E-05	5.32E-05	-17.2%
Twin defect	3.18E-07		3.57E-06		1.80E-10		1.30E-06	1.61E-06	15.7×10^{3}%
	Control								
	7	**Std.Dev.**	**8**	**Std.Dev.**	**9**	**Std.Dev.**	**Average**	**Std.Dev.**	
Lattice Parameter	**4.0503**	4.73E-05	**4.0497**	6.48E-05	**4.0500**	5.79E-05	4.0500	2.40E-04	
crystallite size	**2810.79**	189.98	**2124.27**	68.98	**2251.82**	155.36	2395.63	2.98E+02	
Microstrain	**3.06E-04**	1.10E-05	**4.06E-04**	1.32E-05	**9.97E-05**	3.39E-05	2.71E-04	1.28E-04	
Intrinsic	2.46E-08		3.91E-10		1.02E-12		8.33E-09	1.15E-08	
Extrinsic	3.38E-08		1.32E-04		5.43E-06		4.58E-05	6.10E-05	
Twin defect	2.42E-08		3.36E-10		4.96E-13		8.18E-09	1.13E-08	

Discussion and review of changes for XRD

Lattice parameter

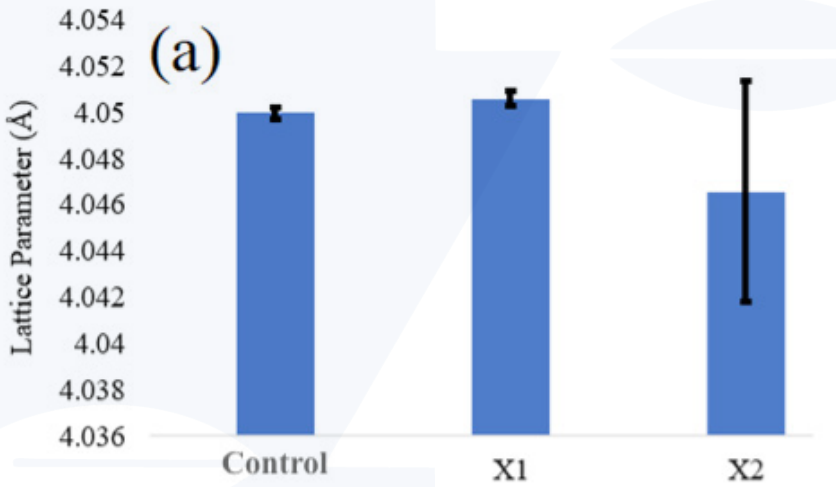
The lattice parameter refers to the physical dimension of the unit cell in a crystalline lattice. If the ratio is smaller, it means that the lattice is more compact, and if it is larger, it means that the lattice is more expanded [21-28]. No significant changes were observed in this parameter for the samples.

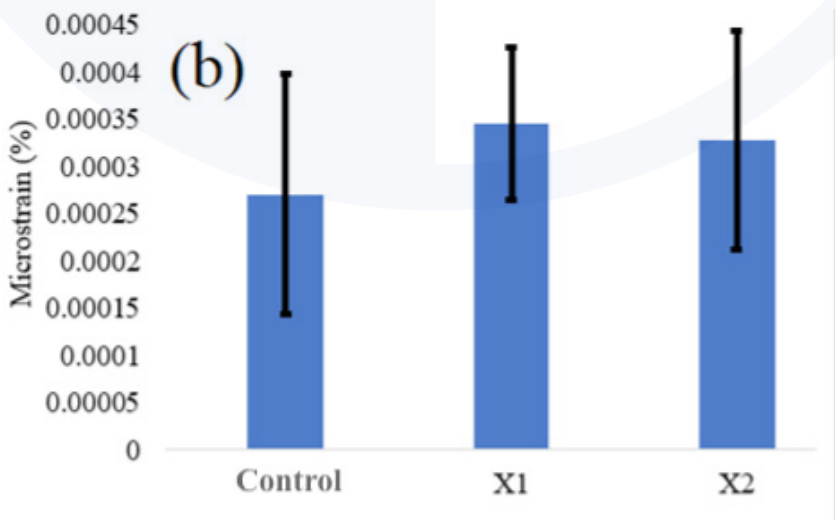
Lattice strain (Microstrain)

Lattice strain is the difference between crystalline lattice sizes that led to the formation of lattice strain [21-28]. An average of approximately (~ 20%) increase in lattice strain was observed in the samples under TCF.

Crystallite size

This factor is partly representative of the crystalline cells that must be created without strain or defect [21-28]. The size of crystalline areas decreased in TCF cases, except for one case (sample number 6), this reduction was up about (~ 13%) on average.





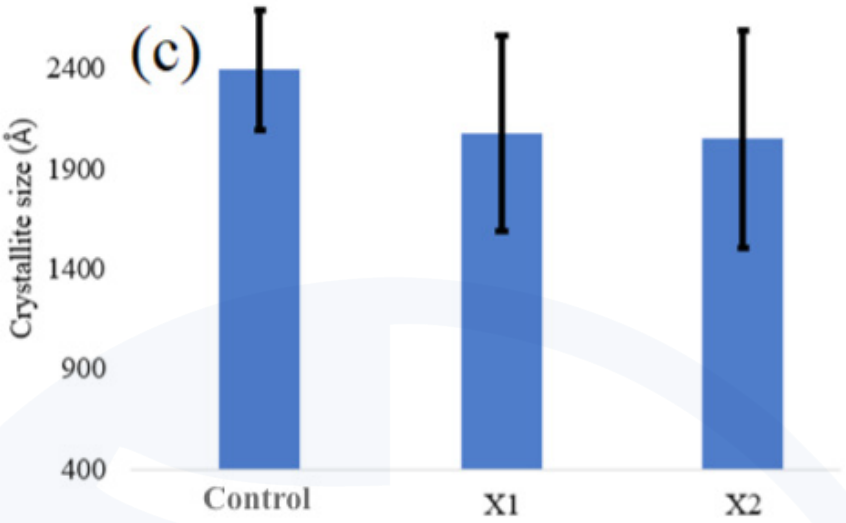


Figure 3. Mean and standard deviation calculated for (a) lattice parameter (b) lattice strain (c) crystal area size.

Intrinsic defects

As in TCF groups, this defect is occurring with a difference of about average (~ 58×10^{3}%).

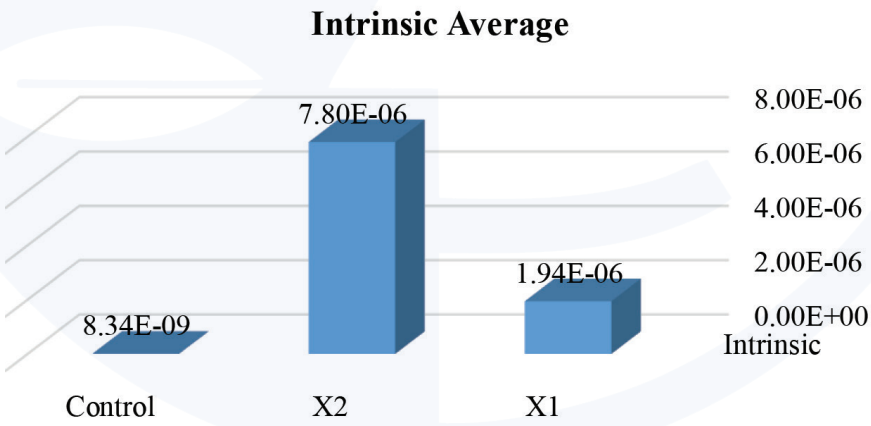


Figure 4. The average of Intrinsic defects

Extrinsic Defects

This disorder has decreased under TCF by an average of (~ 39%).

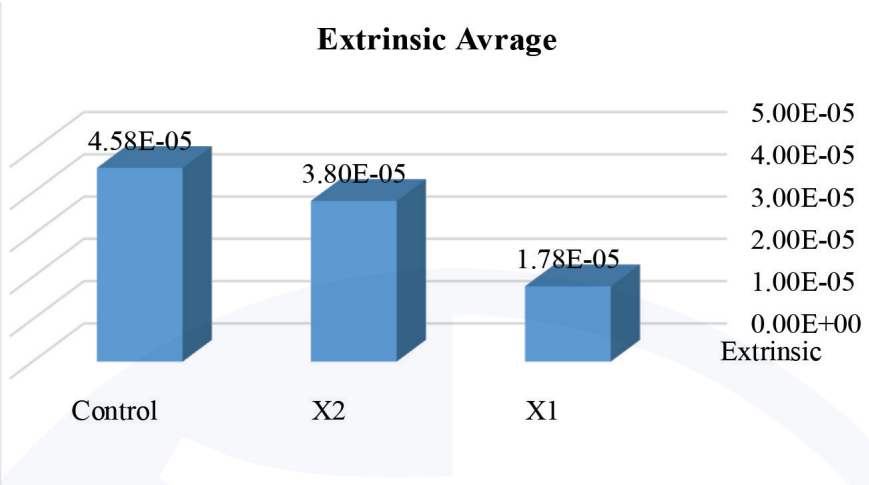


Figure 5. The average of extrinsic defects

Twin Defects

Twin defects represent a special type of boundary that is created by the symmetry of the crystalline lattice mirrors.

Twin boundary increases the strength of the material, causes plastic deformation in materials with BCC and HCP structure, has higher energy than the intragranular and is suitable for chemical interaction [21-28].

Except for one case under the CF, in most samples as well as in the average data, this factor shows a significant increase of about (~30×10^3%).

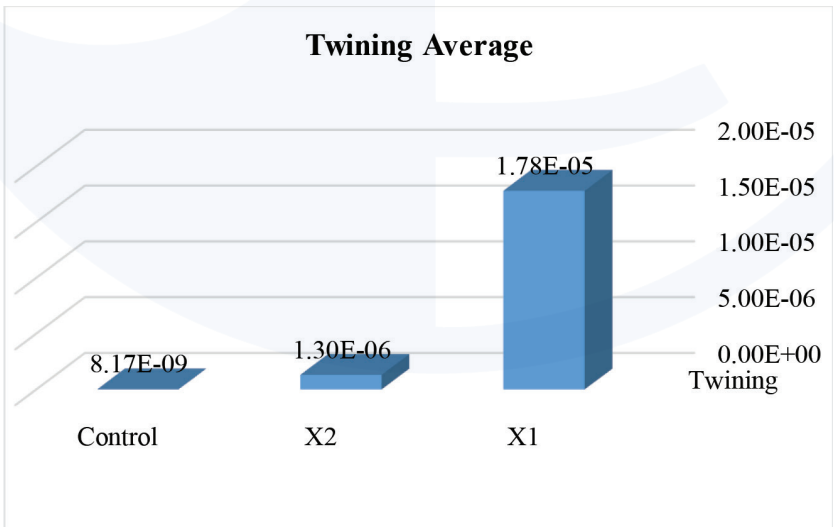


Figure 6. The average of extrinsic defects

Conclusion

- In X-ray diffraction analysis (XRD), the average mean lattice strain (lattice disorder) was higher (~ 20% on average - Table 7) in both X1 and X2 groups than in the control group.
- In contrast, the average crystallite sizes in both groups were less than the control group, which was consistent with lattice strain change (~ 13% on average - Table 7).
- There were some differences in the lattice parameter.
- Extrinsic defects in X1 and X2 groups decreased (~ 39%) on average compared to the control group (Table7)
- Intrinsic and Twin defects in X1 and X2 groups increased (~ 103 %) on average compared to the control group (Table7).

In general, a crystalline defect is a disorder of the atoms and ions' order in a part of the crystalline lattice of matter. Manufacturing processes, such as mechanical work and metal deformation, can increase lattice defects and strain. Entering alloy elements can also affect atomic distances and lattice parameters [29-30].

Being one-element, similarities in composition and impurities in the samples and no difference in how they are processed, make the factor of Consciousness Bond Field to be recognized as the possible cause for these changes. Also, in pure aluminum (1000-series), electrical conductivity, ductility, and corrosion resistance are among the inherent properties [11].

Since pure aluminum (99.75%) purity, according to spectrochemical analysis after casting) is used in this research and according to the principles of T-Consciousness and T-Consciousness Fields, the pure elements of the Mendeleev table are included in the category of fixed T-Consciousness Fields, the pure aluminium is not influenced by the variable T-Consciousness Fields, which is Consciousness Bond Field in this study. In other words, participation in reaction by pure aluminium due to the influence of this Field is not expected, and some of the principal factors of this metal remain in a stable state.

The structure of crystal lattice is related to the collection of atoms and the above experiment shows that the variable T-Consciousness Field of Consciousness Bond Field influences the collective properties and not the individual properties (variable T-Consciousness Field). It should be noted that the effect of variable T-Consciousness Fields such as Consciousness Bond Field on materials with chemical compounds is to change the reactions [4]. But in the case of pure materials from the point of view of the matter, changes in the principal factors are not expected. However, the same material is a collection of millions of atoms, and in terms of atomic structure, changes in the collection of atoms are possible. Therefore:

Unalloyed aluminum under Consciousness Bond Field was more disordered in terms of crystalline lattice structure and no significant changes were observed in the properties.

Determining the physical and microstructural mechanisms that have occurred to alter properties under the TCF requires more specialized studies using more equipment. But preliminary results show that TCF as a factor independent of matter and energy and even information could have measurable effects on matter.

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