

Research Article

Origin and Formation of Carbonatoblastites (Known as Carbonatites); The First Prototype Constitution of the Article

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Abstract

To date, carbonatites are known as rocks of magmatic origin, rare in nature. However, as a result of our scientific research (field, petrographic and mineralogical studies, etc.), it has been determined that carbonatites are not of magmatic origin. Carbonatoblastites (known as carbonatites of magmatic origin and rarely seen in nature); developed within the regional dynamothermal Tarhan metamorphism cycle, and developed in the changing physical conditions (P/T) of the facies and sub-facies of the Abukuma type reversed regional regressive dynamothermal metamorphism, where temperatures are effective compared to pressures ($T > P$, temperatures have left their mark/seal on the metamorphism). Pure-impure carbonate/limestones, which are primary rock units, and pure-impure marbles, which are the metamorphic equivalent rocks of Barrow-type regionally progressive dynamothermal metamorphism, where pressures are effective compared to temperatures of primary rock units ($P > T$, pressures have left their mark on metamorphism), they were formed within. Carbonatoblastites are derived in the solid phase and in-situ from the rock units in which they were formed. Carbonatoblastites/Carbonatoblastic rock series and their derivatives are defined, named and classified under the general name of modern metablastic rock series and their derivatives, which are a new type of metamorphic rocks of metamorphic origin, rootless, of pure-impure carbonate/limestones with different primary rocks. Metablastic rock series and their derivatives are formed from different primary source rock units. Under the name of carbonatoblastites/carbonatoblastic rock series and their derivatives, many different carbonatoblastite type metablastic rocks (alkali metablastites, syenitoblastite, monzonitoblastite, calcitoblastite, calcito-dolomitoblastite, dolomitoblastite, sideritoblastite, stroncianitoblastite etc.) and carbonate-based rock-forming main-secondary-trace carbonatoblast type different crystalloblast neominerals (calcitoblast, dolomitoblast, witheritoblast, stroncianitoblast etc.) have been etymologically redefined, named, classified and their physical-chemical properties have been determined. Carbonatoblastic rock series and their derivatives/carbonatoblastites (known as carbonatites of magmatic origin and rare), contrary to the views in Geology/Earth Sciences literature that they are rarely seen in nature, have very thick and widespread outcrops within the metamorphic belts on our planet, the Earth. They were generally defined and mapped as recrystallized limestone/carbonate and marbles by previous researchers.

Keywords

Tarhan Metamorphism Cycle, Constitution of the Article, Tarhan Method, 5th State of Matter, Optical Signals, Solid Neosolution, Carbonatoblastites

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1. Introduction

1.1. Definition and Naming of Carbonatoblastites

Before the concept of carbonatite was introduced; the first carbonatite formations were studied by [3] near Sundsvall town on the Alnön Island of Sweden. However, the concept of "carbonatite" was first introduced by [4, 7] and [19, 20] suggested that silica-unsaturated foids, silica-poor melilite and carbonatites were formed in the reactions of magmas with limestone (limestone syntexis). Carbonatites were interpreted as plutonic rocks of magmatic origin formed as a single calcite mineral from compression, percolation and magma separation.

Carbonatites are defined by the International Union of Geological Sciences (IUGS) as igneous rocks containing more than 50% modal primary carbonate [14]. Depending on the dominant carbonate mineral, a carbonatite is called 'calcite carbonatite', 'dolomite carbonatite' or 'ferrocarbonatite' where the main carbonate is rich in iron.

Tarhan suggested that carbonatites are not magmatic intrusions, plutons, batholiths, carbonate dykes, pegmatitic dykes, sills, lenses and stocks, etc. On the other hand, carbonatites; It has developed in the Abakuma type inverted regional regressive dynamothermal metamorphism phase/type, where temperatures are effective compared to the developed pressures within the regional dynamothermal Tarhan metamorphism cycle within the metamorphic belts ($T > P$, T: Temperature P: Pressure; Puts the seal of temperatures on metamorphism). Previously existing (pre-existing) pure-impure carbonate/limestone primary source rock units and primary source rock units are metamorphic equivalent rocks of Barrow-type regional progressive dynamothermal metamorphism, where pressures are effective compared to temperatures ($P > T$, pressures mark metamorphism). It was formed in pure and impure marbles. Carbonatites were derived from the rock units in question in solid phase and in situ. Carbonatites correspond to carbonatoblastite type metablastic rocks, which are a type of new modern metamorphic rocks of metamorphic origin, without roots/rootless [22-28].

He stated and described for the first time that carbonatoblastic rock series and their derivatives/carbonatoblastites are a new type of metablastic rocks of metamorphic origin, rootless. He named and classified them according to the dominant carbonate crystalloblast neominerals, and revealed their physical-chemical properties and formation mechanisms. There are over 325 types of carbonatoblastite type metablastic rock series and their derivatives. They contain less than 30% and more than 50% carbonatoblast type crystalloblast neominerals with different texture, structure, color, mineralogical and chemical composition.

He mentioned the existence of very thick and widespread outcrops in metamorphic belts. He stated that it has the potential for very important metablastic ore/mineral deposits

[25]. He classified carbonatoblastite type metablastic rock types depending on the dominant main carbonatoblast crystalloblast neominerals that form the rock (calcitoblastite, calcito-dolomitoblastite, dolomitoblastite, aegonitoblastite, stroncionitoblastite, huntitoblastite, sideritoblastite etc.; Table 1). He stated that the main-secondary-trace carbonatoblast type crystalloblast neominerals that form the rock of carbonatoblastites are formed by metablastization (blast/embryo formations with metamorphism event) from solid neosolutions with different chemical compositions that develop as a result of metamorphism and by recrystallization and gradual growth in the form of blast/embryo, blast aggregates, crystalloblast, porphyroblast and megacrystalloblast type carbonatoblast crystalloblast neominerals. He named the rock-forming main-secondary-trace carbonatoblast crystalloblast neominerals that were formed and grew by metamorphism for the first time by adding the -oblast suffix to the end of the etymologically known mineral names (calcite/calcitoblast, dolomite/dolomitoblast etc.). He defined, named, physical-chemical properties and classified a type of new modern different metamorphic rocks (metablastic rocks) that are formed from one and more different rock-forming main carbonatoblast crystalloblast neominerals and are pure or impure carbonate/limestone origin under the general name of carbonatoblastic rocks / carbonatoblastites / carbonatoblastic rock series and derivatives for the first time.

Tarhan up to now; The determination of carbonatites, which are of magmatic origin and rare in nature, is made according to O/C isotope ratios. This method is difficult and very expensive. It has been determined for the first time in this article and in my other studies [22-28] that the rocks known as carbonatites are metamorphic origin, rootless, metablastic rock series and derivatives/metablastites/carbonatoblastic rocks, which are a kind of new modern metamorphic rocks [22]. Therefore, pure-impure carbonatoblastites show single optical axis positive (+) sign ($n_e > n_o$) of rock-forming main-secondary-trace silicate-carbonate based crystalloblast neominerals. On the other hand, the previously existing pure-impure limestone/carbonate primary rock units from which carbonatoblastites/carbonatoblastic rocks were derived in-situ in solid phase and the rock-forming main-secondary-trace carbonate of pure-impure classical marbles, which are the metamorphic equivalents of the primary source rocks. -silicate-based minerals have been determined for the first time to have a single optical axis with a negative (-) sign ($n_e < n_o$). This method was first defined and named as "Tarhan method" [22]. With the Tarhan method, pure-impure carbonatoblastites/carbonatoblastic rocks/carbonatoblastic rock series and their derivatives (known as carbonatites of magmatic origin, rarely seen in nature) have a single optical axis positive (+) sign of carbonate-silicate based crystalloblastic neominerals; It is possible to separate the pure-impure carbonate/limestone

primary source rock units, which are derived in solid phase and in situ from the pure-impure carbonatoblastites within the regional dynamothermal Tarhan metamorphism cycle, and the pure-impure classical marbles, which are the metamorphic equivalent rocks of the primary source rock units, with a very cheap method, easily and practically, with the single optical axis negative (-) signs of the main-secondary-trace carbonate-silicate based minerals that form the rocks. The single axis optical positive (+) and negative (-) optical signs of the minerals forming the rocks will be reflected in the physical properties of the rocks. The optical signs of the minerals show that the rocks were derived from each other in solid phase and in-situ in the metamorphic belt and that they are gradually transitional and intertwined side by side in the vertical and lateral directions. Since the rocks in question were formed in different types of metamorphism developed within the Tarhan metamorphism cycle, they show different physical properties (textural structure, color, mineralogical composition) depending on the type of metamorphism in which they were formed. However, their chemical composition does not change (for more detailed information, see headings 3. and 4. of this article, [22, 23, 25].

Tarhan stated that carbonatoblastic rock series and their derivatives/carbonatoblastites are a type of new modern metamorphic rocks of the 3rd generation, and that they form superionic metablastic solids/rocks/minerals corresponding to the 5th state of matter [23]. He suggested that different metablastic rock series and their derivatives, which are an allotropic type of modern metamorphic rocks, correspond to species with different origins.

1.2. Opinions on the Origins of Carbonatoblastites

To date, there are three main hypotheses/views explaining the origin of carbonatite melts: (1) Segregation of immiscible parental carbonate silicate magmas at crustal or mantle pressures [13, 34, 15, 16, 33, 30]; (2) Crystal fractionation of parental carbonate silicate magmas such as olivine melilitites or kamafugites [29]; (3) Low-grade partial melting of carbonate mantle peridotite below 70 km depth [31, 32, 9, 2, 6, 11, 1, 18]. Hypotheses suggesting or supporting that carbonatites are derived from the Earth's crust [17, 10] or from the Earth's mantle with some crustal contributions [5, 21] have also been proposed.

In contrast to these three different magmatic views on the origin and formation of carbonatites, the fourth view is the (4) metamorphic view [22-28]. In the type/stage of Abukuma type reversed regional regressive dynamothermal metamorphism, where temperatures are effective compared to developed pressures ($T > P$; temperatures have left their mark/seal on metamorphism) within the regional dynamothermal Tarhan metamorphism cycle, which plays a very important role in the evolution and balancing of metamorphic belts, the pre-existing pure and impure carbonate/limestone primary source

rock units and the said primary source rock units are derived in solid phase and in-situ from the pure and impure marbles, which are the metamorphic equivalents of the Barrow type regional progressive dynamothermal metamorphism, where pressures are effective compared to developed temperatures ($P > T$; pressures have left their mark/seal on metamorphism).

Contrary to the views regarding the origin of magmatic and rare carbonatites, it has been suggested that they are of metamorphic origin. Carbonatites, which are rare and known to be of magmatic origin; They correspond to carbonatoblastic rock series and their derivatives/carbonatoblastites, which are a new type of modern metamorphic rocks of metamorphic origin, rootless, with very thick and widespread outcrops in metamorphic belts. Carbonatoblastites; They form a new type of modern metablastic rock series and their derivatives with different primary origin rocks (pure-impure carbonate/limestone).

2. Formation Mechanism of Silicated Rocks and Carbonatoblastites

2.1. Formations of Silicate Crystalloblast Neominerals of Silicate Rocks

Regional dynamothermal Tarhan metamorphism cycle: It consists of two separate regional dynamothermal metamorphisms with different physical conditions (P/T), physical parameters (P , T) and physical activities ($T > P$, $P > T$); developed interdependently, changed and transformed each other, developed following each other, are inverse conjugates of each other, overlapped with each other within the metamorphic system, developed in different thermodynamic systems [22-28]. The first type of metamorphism to develop within the regional dynamothermal Tarhan metamorphism cycle is the Barrow type regional progressive dynamothermal metamorphism, where pressures are effective compared to temperatures ($P > T$, pressures mark the metamorphism). As gradual decreases (regression, decompression) develop in the pressures of the Barrow-type regional progressive dynamothermal metamorphism, the effectiveness of the temperatures gradually increases (the decrease in pressure increases the effectiveness of the temperature) and the change to Abukuma type inverted regional regressive dynamothermal metamorphism, where temperatures are effective compared to the pressures ($T > P$, temperatures mark the metamorphism). and overlaps with its transformation within the metamorphic system. In this way, the metamorphism cycle completes its evolution. It becomes balanced in the metamorphic system [22-28].

In metamorphic belts, very common and thick outcrops of metablastic rock series of metamorphic origin and their derivatives (known as magmatic origin granite/granitoid, gabbro/gabroid, diorite/dioritoid, charnockite/charnokitoid and carbonatite/carbonatoid intrusion, pluton and batholiths, etc.)

are seen. Due to the differences between pure and impure carbonate/limestones, which are primary rocks of origin, and pure and impure classical marbles, which are the metamorphic equivalents of primary rocks, carbonatoblastites, which are a type of metablastic rocks (very rare, magmatic origin carbonatite intrusion, carbonate dyke, head, vein, lens, carbonatite pegmatitic and stocks, etc.) have very thick and widespread outcrops.

In metamorphic belts; as a result of the exposure of previously existing (pre-existing) very thick and widespread primary origin rocks, pure-impure different carbonate/limestones

to the regional dynamothermal Tarhan metamorphism cycle, widespread and thick outcrops of carbonatoblastic rock series and their derivatives/carbonatoblastites, which form a type of metablastic rocks, which are very thick and widespread, rootless, metamorphic origin, a new type of modern metamorphic rocks, develop. There are thick and widespread outcrops in the metamorphic belts of all countries. However, they were generally defined, named and mapped by previous researchers as carbonate, recrystallized limestones/carbonates and marbles [22-28].

Table 1. The same and similar ionic radius ions in the chemical compositions (carbonatoblastites) of some mixed crystalline solid solution silicate-carbonate crystalloblast neominerals that developed in the Abukuma type reversed regional regressive dynamothermal metamorphism type ($T > P$) where temperatures are effective compared to the developed pressures within the regional dynamothermal Tarhan metamorphism cycle; metamorphic origin, anhydrous and stable carbonate-silicate crystalloblast neominerals developed by recrystallization. Expansive structured, ring and frame crystal structure types (taken from [25]).

Crystal Structures	Mineral	Formula	Ion (Cation)	Radius (rÅ)	
Ring Silicates	Cordierite	$Mg_2Al_3(AlSi_5O_{18})$	Mg^{2+}	0.72	
	Quartzoblast	SiO_2	Si^{4+}	0.40	
	Corundoblast	Al_2O_3	Al^{3+}	0.53	
	Magnesioblast	$MgCO_3$	Mg^{2+}	0.72	
	Hunitoblast	$MgCa(CO_3)_4$	Mg^{2+}	0.72	
	Simitzonitoblast	$ZnCO_3$	Ca^{2+}	0.75	
	Sideritoblast	$FeCO_3$	Fe^{2+}	0.77	
	Kutnaboritoblast	$CaMn(CO_3)_2$	Mn^{2+}	0.82	
	Rhodochrosite	$MnCO_3$	Mn^{2+}	0.82	
	Framework Silicates	Albitoblast	$NaAlSi_3O_8$	Na^+	1.02
		Calcitoblast	$CaCO_3$	Ca^{2+}	1.10
		Aragonitoblast	$CaCO_3$	Ca^{2+}	1.10
		Ankeritoblast	$CaMg(CO_3)_2$	Ca^{2+}	1.10
		Stroncytoblast	$SrCO_3$	Sr^{2+}	1.16
Cerusitoblast		$PbCO_3$	Pb^{2+}	1.18	
Witheritoblast		$BaCO_3$	Ba^{2+}	1.36	
Celsianoblast		$BaAl_2Si_2O_8$	Ba^{2+}	1.36	
Orthoclsoblast	$KAlSi_3O_8$	K^+	1.38		

Metablastic rock series and their derivatives (known as granite/granitoid, gabbro/gabbroid, diorite/dioritoid, charnockite/charnockite, carbonatite/carbonatoid intrusion, pluton and batholiths of magmatic origin etc.) have developed in the Abukuma type reversed regional regressive dynamothermal metamorphism type/stage where temperatures are effective compared to pressures ($T > P$) within the regional

dynamothermal Tarhan metamorphism cycle. Compared to the temperatures of previously existing primary source rock units (cosmic upper mantle peridotites, continental magmatic rock series/ocean crust series/ophiolite series, ensimatic-ensialic island arc origin volcanosedimentary series, volcanic and different sedimentary rock units, etc.) and primary source rock units. They are derived in solid phase and in-situ

from the metamorphic rocks (schist, micaschist, amphibolite, etc.) that are the metamorphic equivalent of the Barrow type regional progressive dynamothermal metamorphism where pressures are effective ($P > T$).

Metablastic rock series and their derivatives (known as granite/granitoid, gabbro/gabbroid, diorite/dioritoid, charnockite/charnockite intrusion, pluton and batholiths of magmatic origin etc.) are generally formed by the enrichment and domination of main-secondary-trace felsicoblast crystalloblast neominerals with granite mineralogic composition (quartzoblast, feldspathoblast etc.) in solid phase and in-situ. Because 90-95% oxygen, silicon and aluminum elements that form the crystal structures of the most abundant metamorphic-non-metamorphic minerals in nature are formed by $(\text{SiO}_4)^{4-}$ or $[(\text{Si}, \text{Al})\text{O}_4]^{4-}$ tetrahedrons (smooth-surfaced silicon tetrahedron) and also have very important roles as root silicate anion since Al atom will also enter instead of Si atom (Figure 1).

If the root silicate anion $(\text{SiO}_4)^{4-}$ forming silicate minerals had not formed or did not exist; no rock-forming primary-secondary-trace and metallic-non-metallic ore minerals, solid rocks and ores formed by the mentioned minerals would have formed in nature and in the Universe. In the Abukuma type reversed regional regressive dynamothermal metamorphism type/stage where temperatures are effective compared to pressures ($T > P$; temperatures mark metamorphism), mineral crystal structures develop by arranging $(\text{SiO}_4)^{4-}$ or $[(\text{Si}, \text{Al})\text{O}_4]^{4-}$ tetrahedrons/root silicate anion in different regular structured shapes under the existing physicochemical conditions. Within the regional dynamothermal Tarhan metamorphism cycle, in the changing physical conditions of the facies and sub-facies (P/T) of the Abukuma type reversed regional regressive dynamothermal metamorphism, where temperatures are effective relative to pressures ($T > P$, temperatures are the hallmark of metamorphism), the protominerals-metaprotominerals of the Barrow type regional progressive dynamothermal metamorphism, where pressures are effective relative to temperatures ($P > T$, pressures are the hallmark of metamorphism), lose their stability and gradually dissolve in the solid phase and in-situ. With dissolution in the solid phase, solid neosolutions with different chemical compositions develop extensively, respectively.

In the active heat of Abukuma type reversed regional regressive dynamothermal metamorphism, free ions (K^+ , Na^+ , Ca^{2+} , Mg^{2+} , Fe^{2+} , Al^{3+} , Si^{4+} , O^{2-} , etc.) of the main rock-forming elements in the solid neo-solutions with different chemical compositions, which are electrically charged and have increased diffusion rates (atomic movement/vibration), unstable and disordered structures, are not stable. The first thing that the electrically charged and diffusion-rate increased ions of oxygen, silica and aluminum atoms in the unstable and disordered solid neosolution will do spontaneously due to their geochemical properties in the current physicochemical conditions of metamorphism is to come together and form $(\text{SiO}_4)^{4-}$ or $[(\text{Si}, \text{Al})\text{O}_4]^{4-}$ tetrahedrons/root silicate

anion (Figure 1).

In the unstable and irregular structured solid neosolutions developed under the changing physical conditions (P/T) of Abukuma type reversed regional regressive dynamothermal metamorphisms, electrically charged and with increased diffusion rates, the cations of the main rock-forming elements (K^+ , Na^+ , Ca^{2+} , Mg^{2+} , Fe^{2+} etc.) become electrically neutral by binding to the corners of $[(\text{Si}, \text{Al})\text{O}_4]^{4-}$ / $(\text{SiO}_4)^{4-}$ tetrahedrons/root silicate anions forming the mineral crystal structures arranged in stable and regular groups/chains. Under the changing physical conditions (P/T) of reversed regional regressive dynamothermal metamorphisms, the elements that form unstable and irregularly structured solid neosolutions with different chemical compositions, with increased diffusion rates, and rock-forming main-secondary-trace minerals are bound to the corners of $[(\text{Si}, \text{Al})\text{O}_4]^{4-}$ / $(\text{SiO}_4)^{4-}$ tetrahedrons/root silicate anions, and stable, light-dark colored mixed crystalline solid solution index/characteristic metamorphic minerals and mineral paragenesis/ensembles are formed under the current physicochemical conditions of metamorphism (Figure 1).

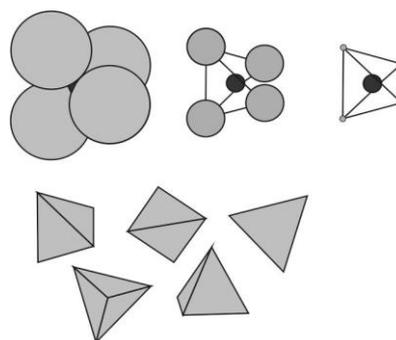


Figure 1. $[\text{SiO}_4]^{4-}$ tetrahedron, which is also a radical silicate anion (silicon tetrahedron with smooth surfaces), forms the main-secondary-trace crystal structures of all metamorphic and non-metamorphic silicate minerals. In the center of the tetrahedron, there is a Si atom (black) and four oxygen atoms around it (grey) (modified from J [12]). By forming stable and regular structured groups in the current physicochemical conditions of metamorphism, they develop stable mineral crystal structures in the changing current physical conditions of metamorphism (P/T). The cations of the main rock-forming elements (Fe^{2+} , Mg^{2+} , Ca^{2+} , Na^+ and K^+ etc.) present in the environment are bonded to the crystal structures of silicate minerals in order, and stable light-dark colored mixed crystalline solid solution metamorphic-non-metamorphic silicate minerals are formed in the current physicochemical conditions.

2.2. Formation of Carbonatoblastites, Carbonate and Silicate Origin Crystalloblast Neominerals

Similarly to the silicate rocks and minerals mentioned above; in the second and last phase of the regional dynamothermal Tarhan metamorphism cycle, in which temperatures are effec-

tive compared to pressures ($T > P$), in the changing physical conditions of the facies and sub-facies of the Abukuma type reversed regional regressive dynamothermal metamorphism (the properties of the mentioned metamorphism, facies names, index metamorphic and rock-forming main crystalloblast neominerals have been changed and reconstructed; [25], within closed and transitional thermodynamic systems (the fourth transitional/semi-open-semi-closed thermodynamic system was defined for the first time, apart from the three known isolated, closed and open thermodynamic systems; [25] Carbonate mineral species and other main rock-forming silicate minerals contained in classical pure-impure marbles (dominantly metamorphic carbonate minerals) which are the metamorphic equivalent of the regional progressive dynamothermal metamorphism of the Barrow type in which the pressures ($P > T$) are effective compared to the temperatures developed in the first phase of the regional dynamothermal Tarhan metamorphism cycle of the pre-existing pure-impure carbonate/limestone primary source rock units (dominantly carbonate minerals) and the primary source rock units lose their stability due to the temperatures effective in the reversed regional regressive dynamothermal metamorphism and are partially or completely dissolved in the solid phase and in-situ.

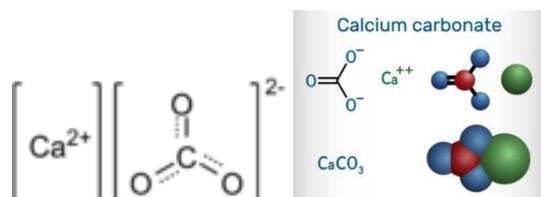


Figure 2. Ionic structure/molecule of calcium carbonate. Just as the $[\text{SiO}_4]^{4-}$ tetrahedrons, which are the root silicate anion, form the crystal structures of silicate minerals, similarly, the root carbonate anion $[(\text{CO}_3)^{2-}]$ forms the stable and regular crystal structures of metamorphic-nonmetamorphic stable carbonate minerals of carbonate-dominant rocks under the current physicochemical conditions. The root carbonate anion $[(\text{CO}_3)^{2-}]$ has a C atom in the center and three oxygen atoms around it (Taken from google.com and wikipedia.com.). The root carbonate anions develop stable carbonate mineral crystal structures under the current physicochemical conditions by forming regular structured groups/chains. If the root carbonate anion did not exist or did not form, no carbonate mineral and no metallic-nonmetallic ore and ore minerals of carbonate origin would have formed. The main rock-forming element cations (Fe^{2+} , Mg^{2+} , Ca^{2+} , Na^+ and K^+ etc.) present in the environment; cations of metallic-nonmetallic ore minerals; cations of incompatible elements with large ionic radii (rare earth elements/REE, radioactive elements etc.) bind to the stable and regular structured groups/chains formed by the radical/root carbonate anions that form the carbonate-based mineral crystal structures, and thus, stable metamorphic-based and carbonate-based rock-forming main different carbonatoblast crystalloblast neominerals; carbonate-based metallic-nonmetallic ore crystalloblast neominerals; carbonate-based rare earth elements/REE and radioactive crystalloblast neominerals' own metamorphic-based crystalloblast neominerals that are unique/belong to them are formed (Figures; taken from google.com and wikipedia.com).

Because, in Abukuma type reversed regional regressive dynamothermal metamorphism where temperatures are effective compared to pressures ($T > P$), due to the effective temperatures, the atomic building blocks (atom, ion, molecule) forming light-dark colored mixed crystal, solid solution silicate and carbonate minerals and the chemical bonds (electrostatic repulsion-attraction force) between the minerals forming the rock cause weakening, dissolution and rupture. In the dissolutions that develop gradually in solid phase and in-situ between the minerals forming the rocks and between the atomic building blocks forming the minerals, unstable, anhydrous, irregularly structured and different chemically composed solid neosolutions consisting of electrically charged free ions with increased diffusion rates (atomic movement/vibration) develop gradually and widely, respectively [22, 23].

With dissolution in the solid phase, depending on the types and contents of protominerals (primary source rock minerals) of pure-impure carbonate/limestones and metaprotominerals (minerals of classically known metamorphic rocks) of pure-impure marbles, solid neosolutions with different chemical compositions develop (alkali aluminum carbonate silicate/ K^+ , Na^+ , Al^{3+} , Si^{4+} , $(\text{CO}_3)^{2-}$, $(\text{SiO}_4)^{4-}$, O^{2-} ; calcium carbonate silicate/ Ca^{2+} , Al^{3+} , Si^{4+} , $(\text{SiO}_4)^{4-}$, $(\text{CO}_3)^{2-}$, O^{2-} ; ferromagnesium carbonate silicate/ Mg^{2+} , Fe^{2+} , Al^{3+} , Si^{4+} , $(\text{SiO}_4)^{4-}$, $(\text{CO}_3)^{2-}$, O^{2-} etc.).

$(\text{SiO}_4)^{4-}$ or $[(\text{Si}, \text{Al})\text{O}_4]^{4-}$ tetrahedron/root silicate anion/smooth-surfaced silicon tetrahedron (Figure 1) plays an active role in the development of crystal structures of rock-forming main-secondary-trace carbonatoblast-silicatoblast crystalloblast neominerals and metallic-nonmetallic carbonatoblast-silicatoblast crystalloblast neominerals depending on the oxygen anion (O^{2-}) and root carbonate anion $(\text{CO}_3)^{2-}$ (Figure 2). By dissolution in solid phase, depending on the content of pure-impure primary source rocks of carbonate origin (carbonate/ CaCO_3 , carbonate-dolomite, dolomite/(Ca, Mg) $(\text{CO}_3)^{2-}$ etc.) protominerals and metaprotominerals of pure-impure classical marbles (marble, mica-quartz marble, calcschist etc.), which are the metamorphic equivalent of regional progressive dynamothermal metamorphism of primary source rock units, are gradually dissolved in solid phase and in-situ; Anhydrous, unstable and irregularly structured solid neosolutions develop, which are composed of electrically charged free ions with increased diffusion rates and different chemical compositions of rock-forming main-secondary-trace crystalloblast neominerals with alkali-aluminum-calcium-magnesium silicate composition (K^+ , Na^+ , Ca^{2+} , Mg^{2+} , Fe^{2+} , Al^{3+} , Si^{4+} , O^{2-} , $(\text{SiO}_4)^{4-}$ and $(\text{CO}_3)^{2-}$ etc.).

In the Abukuma type reversed regional regressive dynamorphism type/stage where temperatures are effective compared to the pressures developing in the second and last stage of the regional dynamothermal Tarhan metamorphism cycle ($T > P$, temperatures mark the metamorphism), the atomic building blocks (atom, ion, molecule) of the rock-forming main-secondary-trace elements that form the solid neosolu-

tions are electrically charged and turned into ions due to the effective temperatures of metamorphism and their diffusion rates increased (atomic movement/vibration) and the solid neosolutions with different chemical compositions formed from free ions of the atomic building blocks (atom, ion, molecule) are not stable. Different cations that form the solid neosolutions; $(\text{SiO}_4)^{4-}$ or $[(\text{Si}, \text{Al})\text{O}_4]^{4-}$ tetrahedron/root silicate anion (Figure 1) combines with oxygen anion (O^{2-}) and root carbonate anion (CO_3^{2-}) (Figure 2) (due to polarization, solid-solid chemical reactions) and becomes electrically neutral. They stabilize by developing oxyto-blast/carbonatoblast/silicatoblast blasts (embryo-embryonization, nucleus-nucleation, bud-budding etc.) and different blast aggregates (K_2O , K_2CO_3 ; Na_2O , Na_2CO_3 ; CaO , CaCO_3 ; MgO , MgCO_3 ; FeO , Fe_2O_3 , Fe_3O_4 , FeCO_3 ; Al_2O_3 and SiO_2 etc.; Figure 1 & Figure 2). oxyto-blast/silicatoblast/carbonatoblast blast/blast/embryo, blast aggregates with the same and similar geochemical properties gradually grow as crystalloblast, porphyroblast and megacrystalloblast rock-forming main-secondary-track different carbonatoblast/silicatoblast crystalloblast neominerals by grouping and adding to each other [(calcitoblast/ CaCO_3 , calcito-dolomitoblast/ CaCO_3 - $\text{CaMg}(\text{CO}_3)_2$, dolomitoblast/ $\text{CaMg}(\text{CO}_3)_2$ etc.).]

With the recrystallization developing from solid neosolutions with different chemical compositions by metablastation (oxyto-blast/carbonatoblast/silicatoblast blast/blast/embryo formation by metamorphism), previously existing pure-impure primary source rock units, carbonate/limestones and known classical pure-impure marbles, which are the metamorphic equivalents of regional progressive dynamothermal metamorphism of primary source rock units, are enriched and dominated by different carbonatoblast-silicatoblast crystalloblast neominerals in solid phase and in-situ. In this way, previously existing pure-impure primary source rock units, carbonate/limestones and pure-impure marbles, which are the metamorphic equivalents of primary source rock units, gradually change and transform into carbonatoblasts/carbonatoblastic rock series and their derivatives in solid phase and in-situ. Pure-impure different carbonatoblast-silicatoblast rock-forming main-secondary-trace crystalloblast neomineralogical composition carbonatoblastic rock series and their derivatives/carbonatoblastites (calcitoblastite, calcitoblastite-dolomitoblastite, dolomitoblastite, aragonitoblastite, ankeritoblastite, syenitoblastite, alkali metablastite, monzonitoblastite etc.) types, thick and widespread outcrops of different metablastic rock series and their derivatives/metablastites (known as magmatic origin carbonatite intrusion, carbonate dyke, pegmatitic vein, head, lens and stocks etc.) develop.

In other words, the radical carbonate anion (CO_3^{2-}) Figure 2), root silicate anion/smooth-surfaced silicon tetrahedral (SiO_4^{4-} / $[(\text{Si}, \text{Al})\text{O}_4]^{4-}$ (Figure 1) and anion groups that develop the crystal structures of the main carbonate-silicate-based crystalloblast neominerals that form rocks in the anhy-

drous, unstable and irregularly structured solid neosolutions with different chemical compositions developed in the current physicochemical conditions of Abukuma type reversed regional regressive dynamothermal metamorphism where temperatures are effective compared to pressures ($T > P$, temperatures are the hallmark of metamorphism) come together and develop their regular crystal structures by arranging in different ways. The main rock-ore-mineral forming elements forming the solid neosolution present in the environment are electrically charged, have increased diffusion rate, free and labile cations, and bind to the carbonate-silicate origin anion groups forming crystalloblast neominerals and to the corners of regular chains, forming different carbonatoblast/silicatoblast/oxyto-blast blast/blast/embryo (embryo/embryonization, nucleus/nucleation, bud/budding etc.) and blast aggregates (calcitoblast/ CaCO_3 , calcito-dolomitoblast / CaCO_3 - $\text{CaMg}(\text{CO}_3)_2$, dolomitoblast- $\text{CaMg}(\text{CO}_3)_2$, sideritoblast/ FeCO_3 , corundoblast/ Al_2O_3 , witheritoblast/ BaCO_3 , strontianitoblast/ SrCO_3 , potassium carbonate/ K_2CO_3 , sodium carbonate/ Na_2CO_3 , cerustoblast/ PbCO_3 , quartzoblast/ SiO_2 , albitoblast/ $\text{NaAlSi}_3\text{O}_8$ and orthoclazoblast/ KAlSi_3O_8 etc.) develop (Table 1). Carbonatoblast/silicatoblast/oxyto-blast blast/blast/embryo and blast aggregates with the same and similar geochemical properties group together and merge with each other to gradually grow as rock-ore-mineral forming main carbonate-silicate origin crystalloblast, porphyroblast and megacrystalloblast neominerals (Table 1).

Solid neosolutions are not stable because they are composed of free ions with electrical charge and increased atomic diffusion rates. They become stable by developing carbonatoblast/silicatoblast/oxyto-blast blast/blast/embryo (embryo/embryo formation, nucleus/nucleation, bud/budding etc.) and blast aggregates with metablast formation (formation of carbonatoblast/silicatoblast/oxyto-blast blast/blast/embryo by recrystallization/solid-solid chemical reactions) in solid phase and in-situ from unstable, anhydrous and irregularly structured solid neosolutions with different chemical compositions formed under the changing physical conditions (P/T) of facies and sub-facies of Abukuma type reversed regional regressive dynamothermal metamorphism where temperatures are effective compared to pressures ($T > P$; temperatures are the hallmark of metamorphism). Different cations forming unstable solid neosolutions with different chemical compositions, root carbonate anion (CO_3^{2-}), root silicate anion/smooth surface silicon tetrahedron/silicate tetrahedron [$(\text{SiO}_4)^{4-}$ / or by adding Al atoms instead of Si atoms ($(\text{Si}, \text{Al})\text{O}_4^{4-}$)] and combine with oxygen anions (O^{2-}) (due to polarization, solid-solid chemical reactions) and become electrically neutral. They become stable by forming carbonatoblast/silicatoblast/oxyto-blast blast/blast/embryo and blast aggregates (Figure 1 & Figure 2).

Because, atoms of different elements gain, lose and share electrons to fill the kinetic energy level of their in their last orbits with 8 electrons (Octet Rule). When elements form

compounds, there is a rule that atoms should bring the number of electrons in their last orbits to eight in order to make them similar to those of noble gases and to become stable. Atoms become stable by taking and giving electrons (ionization/ionization energy). In other words, according to the author, the Octet Rule constitutes the law that the substance cannot be changed, and cannot even be proposed to be changed. Different atoms must minimize the kinetic energy in their last orbits/layers. For this, electrons are exchanged between them. According to this law of matter, different atoms that form matter have to act together. Other than this, they have no choice or other chance.

We can draw the following conclusions from this law: In closed thermodynamic systems, anatexitic magmas do not develop by spontaneous partial melting. In a closed thermodynamic system, magmas will not differentiate from basic to acidic by slow cooling, fractional crystallization, magmatic differentiation/magmatic separation from an anatexitic magma; magmas with acidic-basic composition cannot mix homogeneously with each other; matter will not migrate in the liquid melt phase and solid phase in a closed thermodynamic system; anatexitic magma in the liquid melt phase and solid neosolutions developed in the solid phase in a closed thermodynamic system cannot emplace in the upper zones as intrusions, plutons and batholiths, and also cannot cause metasomatic events; It shows that the matter developed in closed-transitional-open thermodynamic systems, anatexitic magmas developed in the molten liquid phase and solid neosolutions developed in the solid phase tend to become stable by crystallizing and solidifying as a whole in the shortest time period.

In addition, for the crystallization of carbonate-silicate-oxide origin minerals from anatexitic magmas developed in liquid melt phase and solid neosolutions developed in solid phase, firstly the free ions of oxygen, silicon, aluminum and carbon elements which are found in excess in nature and which are electrically charged due to increasing temperatures and whose diffusion speeds (atomic motion/vibration) have increased are consumed to spontaneously come together and develop root silicate anion/smooth surface silicon tetrahedron/silicate tetrahedrons $[(\text{SiO}_4)^4- / \text{ or Al atoms entering instead of Si atoms } ((\text{Si, Al})\text{O}_4)^4-]$ and root carbonate anions $(\text{CO}_3)^{2-}$ (Figure 1 & Figure 2). The most important point to be considered here is the following: According to the magmatic view in geology/geology literature; It has been suggested and accepted that granite magmas rich in quartz-feldspar minerals developed from an anatexitic basic magma developed deep in the earth's crust by slow cooling, fractional crystallization and magmatic differentiation from basic to acidic. However, as mentioned above, oxygen, silicon and aluminum elements, which are the most abundant elements in nature, forming acidic magmas, do not remain in the final stage of crystallization. It is also not possible for them to remain due to their geochemical properties. On the contrary, in order to form the crystal structures of rock-forming main-

secondary-trace silicate minerals, silicate minerals, metallic-non-metallic minerals and the formation of solid rocks formed by minerals, they are immediately consumed in the melt liquid anatexitic magma and in the solid neosolution developed in the solid phase at the beginning, in the first stage and in the shortest time period (Tarhan Rules: According to LIFO and FILO Rules; [25]).

Because, without the formation of radical/root silicate anion/smooth surface silicon tetrahedral/silicate tetrahedral $[(\text{SiO}_4)^4- / \text{ or Al atoms instead of Si atoms } ((\text{Si, Al})\text{O}_4)^4-]$, oxygen anion (O^{2-}) and root carbonate anions $(\text{CO}_3)^{2-}$ (Figure 1 & Figure 2), no magma in nature or in the Universe would crystallize and solidify and become stable. No solid mineral and solid rocks formed by minerals would form. A substance/matter that becomes unstable, anatexitic magma and solid neosolutions are in an unstable state because of the increased diffusion rates (atomic movement/vibration, kinetic energy level in the last orbits of atoms) from electrically charged ions. The first thing they will do in order to become stable is to crystallize with solid-solid chemical reactions and solidify as a whole and become stable. Therefore, regardless of their origin and formation environment, light-dark colored mixed crystalline solid solution silicate minerals, light-dark colored carbonate minerals, metallic-nonmetallic silicate-carbonate origin ore minerals and the solid rocks formed by these minerals constitute 80-95% by volume and weight of the granite mineralogical composition elements, which are the most abundant in nature (see [2]).

In different thermodynamic systems, unstable, irregularly structured liquid melt phase anatexitic magmas formed by partial melting and solid phase dissolution processes, and in different chemical composition, unstable and irregularly structured solid neo-solutions formed by passing through dissolution processes, ions of rock-forming main elements that are electrically charged and have increased diffusion rates due to increasing temperatures cannot remain in an unstable state for a long time. Due to the nature of the matter, the ions in question must become stable in a short time period. Because the law that the substance/matter cannot be changed and cannot even be proposed to be changed dictates this. However, this law is partially and completely invalid in noble/inert gases. There are 8 electrons in their last layers/orbits. Kinetic energy is at a minimum level. They do not have the necessity or desire to form compounds with atoms of other elements. They can move freely. For this reason, unstable and irregularly structured anatexitic magmas, unstable and irregularly structured solid neosolutions, electrically charged due to temperatures, increased diffusion rates, the number of electrons in the last layers not completed to 8, therefore the rock and mineral forming main element ions of different elements with maximum kinetic energy tend to become stable as soon as possible. Within this, electrically charged ions of oxygen, silicon, aluminum and carbon (necessary for carbonate rocks, marble and carbonatoblastite rocks) elements, which are found in unstable solid neosolu-

tions and anatexitic magmas in liquid melt phase and are most commonly seen in nature, come to the rescue of electrically charged ions of other elements.

In the current physicochemical conditions where unstable and irregular structured anatexitic magma and solid neosolutions are present/available, oxygen, silicon, aluminum and carbonate ions come together and are immediately consumed to form root silicate anion/smooth surface silicon tetrahedral/silicate tetrahedral $[(\text{SiO}_4)^4- / \text{or Al atoms enter instead of Si atoms } ((\text{Si, Al})\text{O}_4)^4-]$, oxygen anion (O^{2-}) and root carbonate anion (CO_3^{2-}) are consumed to form regular and stable mineral crystal structures (Figure 1 & Figure 2). They enable the binding of electrically charged, unstable, rock-forming main free cations (Fe^{2+} , Mg^{2+} , Ca^{2+} , Na^+ and K^+ etc.) with increased diffusion rates in the environment/in the setting to the root anions forming regular and stable mineral crystal structures. They cause the crystallization of silicate-carbonate-oxide type minerals, light-dark colored mixed crystalline solid solution free solid minerals. According to the necessary law of matter, atoms of different elements participate in crystallization in this way and unstable anatexitic magma and unstable solid neosolutions solidify and become stable by crystallization. It is clearly seen that there is no differentiation of the matter/substances, differentiation to other magmas, or migration. The view that the magmatic view puts forward that magmas are formed by differentiation from basic to acidic is definitely not true.

Therefore, the cations of the main rock-forming elements combine with the root carbonate anion (CO_3^{2-}), root silicate anion (SiO_4^{4-}) and oxygen anions (O^{2-}) (solid-solid chemical reactions, due to polarization) and become electrically neutral and stable (Figure 1 & Figure 2). In this way, oxyblast blast/blast/embryos (embryo/embryonization, nucleation/nucleation, etc.), carbonatoblast blast/blast/embryos and silicatoblast blast/blast/embryos and blast aggregates of their unique rock-forming parent-subsiary-track free crystalloblast neominerals are commonly formed (K_2CO_3 , Na_2CO_3 , CaCO_3 , MgCO_3 , FeCO_3 , K_2O , Na_2O , CaO , MgO , FeO , Fe_2O_3 , Fe_3O_4 ; BaCO_3 , MnCO_3 , SrCO_3 , BaO , MnO , SrO ; SiO_2 , Al_2O_3 etc.). In the current physicochemical conditions of Abukuma type reversed regional regressive dynamothermal metamorphism, where temperatures are effective compared to pressures ($T > P$, temperatures are the hallmark of metamorphism), oxyblast blast/blast/embryo, silicatoblast blast/blast/embryo, carbonatoblast blast/blast/embryo and blast aggregates with the same-similar geochemical properties group and add to each other, gradually grow and become widely visible as crystalloblast, porphyroblast, megacrystalloblast crystalloblast neominerals specific to the main rock-forming elements.

3. Tarhan Method in Determination of

Pure and Impure Carbonatoblastites

Up to now, carbonatites, which are rarely seen in nature and have magmatic origin, have been determined according to O/C isotope ratios. This is a very difficult and expensive method. However, the author has determined for the first time that the rocks known as carbonatites are a type of new modern metamorphic rocks of metamorphic origin [22, 23, 25, 28]. Carbonatites have definitely not gone through a magmatic process. Nor are they rocks of magmatic origin. Up to now, the rocks known as carbonatites; In the type/stage of Abukuma type reversed regional regressive dynamothermal metamorphism, which developed within the regional dynamothermal Tarhan metamorphism cycle and where temperatures are effective in proportion to pressures ($T > P$; temperatures put their stamp on metamorphism), they were derived as solid phase and in-situ (autochthonous where they are) from the previously existing pure-impure carbonate/limestone primary source rock units and pure-impure classical marbles, which are metamorphic equivalents of the primary source rock units. In the changing physical conditions of the facies and sub-facies of the Abukuma type inverted regional regressive dynamothermal metamorphism (facies types of this metamorphism, index minerals formed in the sub-facies, other mineral parageneses found together with these index minerals were rearranged and structured. The characteristics of the metamorphism were redefined [25]). The previously existing pure-impure carbonate/limestone primary source rock units and the classical metamorphic rocks and minerals, which are the metamorphic equivalents of the primary source rocks, lose their stability and gradually dissolve partially or completely in the solid phase and in-situ. With the dissolution in the solid phase, solid neo-solutions with different chemical compositions, unstable, anhydrous and irregular structures develop, respectively.

However, in the two different regional dynamothermal metamorphism stages that developed within the regional dynamothermal metamorphism cycle, completed the formation of the cycle and caused the system to balance, unstable anatexitic magmas definitely do not develop in the melt phase. On the contrary, as a result of in-situ dissolution of mineral crystal structures that have lost their stability, in the solid phase, dissolution occurs in the mineral crystal structures due to the ions leaving the crystal structures, depending on the rules of Tarhan. The ions in question become unstable by being charged electrically and increasing their diffusion (atomic movement/vibration, increase in the kinetic energy level in the last layers/orbits) due to the effective temperatures in the environment. The crystal structures of light-dark colored mixed crystalline solid solution protomineral-metaprotominerals, which have lost their stability, are formed by increasing the concentrations/condensations of unstable atomic building blocks (atoms, ions, molecules) of different elements formed by dissolving in the solid phase

(without passing into the melt/liquid phase). It has been determined for the first time that solutions with different chemical compositions and unstable and irregular structures are formed. In order to distinguish the solution in question from other different solutions, it was defined and named as solid neosolution for the first time by the author and its geochemical behaviors were determined [25]. The electrically charged, diffusively increased ions of different elements forming the solid neosolution that develops and condenses in the environment cannot remain unstable for a long

In the current physicochemical conditions of metamorphism and thermodynamic system, they develop blast/embryo/nucleus and blast aggregates with recrystallization developing from solid neosolutions with metablastation (blast/embryo, embryo/embryoization, nucleus/nucleation, bud/budding formations etc.) and become electrically neutral and stabilized. Blast/nucleus/embryo and blast/embryo aggregates with the same and similar geochemical properties come together and add to each other and gradually grow as stable rock-forming main-secondary-trace felsicoblast crystalloblast, porphyroblast and megacrystalloblast neominerals in the current conditions of metamorphism. Growing crystalloblast neominerals become widespread, effective and dominant in the environment, generally depending on the primary source rock units, they are enriched in carbonate and granite mineralogy and become dominant, and different primary source rock units and metamorphic equivalent classical metamorphic rocks of primary source rock units are enriched in carbonate or granite mineralogy and become dominant. Primary source rock units (cosmic upper mantle peridotites, terrestrial magmatic rock sequence/ocean crust sequence/ophiolite series, ensimatic-ensialic island arc volcanosedimentary series, different volcanics and different sedimentary rocks) and metamorphic equivalent classical metamorphic rocks are enriched in carbonatoblast or granite mineralogy composition silicatoblast crystalloblast neominerals in solid phase and in-situ and become dominant. In this way, there are gradual, vertical and lateral changes and transformations of pure-impure carbonatoblastic rocks/carbonatoblastites or different metablastic rocks/metablastites/metablastic rock series and derivatives with metamorphic origin, rootless, and a new type of modern metamorphic rocks. There is absolutely no contact metamorphism, cooling and shear zone/contact between them. Metablastic rocks; are known as granite/granitoid, gabbro/gabbroid, diorite/dioritoid, charnockite/charnockitoid, carbonatite/carbonatoid intrusion, pluton, batholith type deep/plutonic rocks that have developed from anatexitic magma with slow cooling, fractional crystallization and magmatic differentiation until today for more information see [22-28].

If, in the regional dynamothermal Tarhan metamorphism cycle, temperatures are effective compared to developed pressures ($T > P$, temperatures put their stamp/seal on metamorphism), previously existing pure-impure car-

bonate/limestone primary source rock units and metamorphic equivalent pure-impure classical marbles' carbonate-silica based minerals of primary source rock units lose their stability and develop solid neosolutions with different chemical compositions. With a similar mechanism, in the existing physicochemical and geochemical environment and conditions of metamorphism, gradually rock-forming main-secondary-trace crystalloblast, porphyroblast and megacrystalloblast neominerals develop, become widespread and dominant with recrystallization developing from solid neosolutions by metablastation. In this way, the previously existing pure-impure carbonate/limestone primary source rock units and pure-impure marbles, which are the metamorphic equivalent rocks of the primary source rock units, are enriched with rock-forming parent- secondary-trace crystalloblast, porphyroblast and megacrystalloblast carbonate-silicate based neominerals and become dominant. Pure-impure carbonate/limestones, which are the primary rock units, and pure-impure marbles, which are the metamorphic equivalent rocks of the primary rock units, are gradually formed in solid phase and in situ by carbonate-silicate-based rock-forming parent- secondary-trace crystalloblast neominerals. They become rich and dominant. In this way, there are changes and transformations into a new metamorphic rock type with different carbonatoblastite/carbonatoblastic rock/carbonatoblastic rock series and derivatives, rootless, metamorphic origin, metablastic rock type with different primary source rocks. Carbonatoblastic rocks are known as carbonatites, which are magmatic rocks that are rarely seen in nature and are seen as intrusions, carbonatite dykes, stocks, sills and lenses.

Therefore, it has been determined that carbonatites known to be of magmatic origin are not of magmatic origin. It has been determined that metablastic rocks, which are rocks of metamorphic origin, rootless, and are a type of new meandering metamorphic rocks known as carbonatites, are carbonatoblastic rocks with different primary origin rocks. The rock-forming mother-talysis-trace silicate and carbonate-based crystalloblast neominerals of carbonatoblastic rocks show a positive (+) sign with a single optical axis in the light polarizing microscope of petrographic thin sections. Carbonatoblastic rocks, which constitute a type of pure-impure carbonate/limestones that are different from metablastic rocks and their primary origin rocks, developed in the Abukuma type inverted regional regressive dynamothermal metamorphism phase, where temperatures compared to pressures are effective ($T > P$). Temperatures are effective in this Abukuma type reversed regional regressive dynamothermal metamorphism type. Different metamorphic minerals and rocks develop in the direction of the effectiveness of temperature. In Barrow type regional progressive dynamothermal metamorphism where pressures are effective compared to temperatures, different metamorphic minerals and rocks develop in the direction of pressure effectiveness. Minerals of metamorphism where pressures are effective, lose their stability

in Abukuma type reversed regional regressive dynamothermal metamorphism stage where temperature is effective compared to pressures and gradually dissolve in solid phase and in situ. Solid neosolutions with different chemical compositions develop with dissolution in solid phase. In the Abukuma type inverted regional regressive dynamothermal metamorphism type, where temperature is active, felsic crystalloblast neominerals of rock-forming mother-tal-iz metamorphic origin, stable, generally granite mineralogical composition, develop widely (primary rock units rich in silicate minerals) through recrystallization from solid neosolutions formed in the physicochemical conditions of metamorphism. depending). Granite-composed stable felsicoblast crystalloblast neominerals become enriched and dominate in the environment. Granite mineralogically rich rock-forming main-secondary-trace felsicoblast crystalloblast neominerals that become dominant in the rock-forming environment become rich in granite mineralogy and become dominant, causing the development of thick and widespread outcrops of leucocratic different metablastic rocks that are rootless, metamorphic origin and a new type of modern metamorphic rocks.

In other words, metamorphic minerals formed in the Barrow type regional progressive dynamothermal metamorphism phase, where the pressures are effective in the changes and transformations of two different regional dynamothermal metamorphisms, which have different physical conditions (P/T), physical parameters (P; T) and physical activities ($T > P$; $P > T$) and have developed within the regional dynamothermal Tarhan metamorphism cycle, lose their stability when they undergo the Abukuma type reversed regional regressive dynamothermal metamorphism type, where the heat is effective, and they change phases with polymorphic changes and transformations as minerals and allotropic changes and transformations as rocks, which are stable in this metamorphic phase. Because, when they pass through different thermodynamic systems with different physical conditions (P/T), physical parameters (P, T) and physical activities ($P > T$; $T > P$) within the metamorphic cycle and remain under their influence, they are required to change phases in order to become stable and balance the system. Although the physical properties (texture, structure, color, mineralogical composition) of the substances/rocks/minerals change in these phase changes, there is no change in their chemical compositions.

It has been determined for the first time that metablastic rocks which are rootless, metamorphic origin and different new type of metamorphic rocks developed in the Abukuma type inverted regional regressive dynamothermal metamorphism stage and pure-impure carbonatoblastic rocks/carbonatoblastites which are different from the primary source rocks of the metamorphic rocks in question show single optical axis (uniaxial) positive (+) sign ($n_e > n_o$) due to the decrease in coordination numbers (decrease in neighboring atom numbers) of rock-forming main-secondary-trace

silicate and carbonate based crystalloblast neominerals. While pure-impure carbonatoblastic rocks/carbonatoblastites/carbonatoblastic rock series and their derivatives which were derived in solid phase and in-situ in the Abukuma type inverted regional regressive dynamothermal metamorphism stage show uniaxial optical positive (+) sign; On the other hand, the previously existing pure-impure carbonate/limestone primary source rock units from which the mentioned carbonatoblastites were derived in solid phase and in-situ and the primary source rock units' pure-impure classical marbles' rock-forming main-secondary-trace carbonate and silicate-origin minerals which are the metamorphic equivalent of Barrow type regional progressive dynamothermal metamorphism show single optical axis negative (-) sign ($n_e < n_o$). Because the primary source rocks, which are pure-impure carbonate/limestones and the primary source rocks' metamorphic equivalent pure-impure classical marbles' rock-forming-main-secondary metamorphic minerals, show single optical axis negative (-) sign due to the increases in coordination numbers (increases in the number of neighboring atoms) in the crystal networks/structures of silicate-carbonate based metamorphic minerals developed at low temperatures and effective pressures. However, the rock-forming carbonate-silicate based minerals of pure and impure classical marbles show much more effective negative (-) properties compared to the carbonate-silicate based minerals of pure and impure carbonate/limestones, which are the primary source rocks.

As a result; it is possible to separate pure-impure carbonatoblastic rocks/carbonatoblastites (so far, in Geology/Earth Sciences literature, they have been accepted as carbonatites of magmatic origin, rarely seen in nature) easily, practically and at a much lower cost due to the single optical axis positive (+) sign of rock-forming parent-trace-trace crystalloblast neominerals, and pure-impure carbonate/limestones of primary origin and metamorphic equivalents of primary source rocks of pure-impure classical marbles, which are derived from the metamorphic cycle, due to the single optical axis negative (-) sign of rock-forming main-secondary-trace metamorphic-non-metamorphic (protomineral, metaprotominerals) silicate-carbonate based minerals. In addition, in the petrographic thin sections where the main-secondary-trace crystalloblast neominerals of pure-impure carbonatoblastic rocks and the main-secondary-trace silicate-carbonate based metamorphic minerals of pure-impure marbles are found together, they show single optical axis negative-positive (\pm) and positive-negative (\pm) double optical sign. This geological data is evidence and indicators that the first Barrow type metamorphism developed within the metamorphic cycle of the crystalloblast neominerals of metablastic rocks and/or pure-impure carbonatoblastites is transitional with the metamorphic minerals of pure-impure marbles and that they are derived from them in solid phase and in-situ. These evidences are also proof and indication that, on a macroscopic scale, pure and impure carbonatoblastic rocks are formed from pure

and impure marbles in the solid phase and in situ, that they are gradually transitioning with each other in vertical and lateral directions in the field, and that they can be found side by side, one within the other.

4. The First Prototype Constitution of the Article

One of the results I have reached as a result of my original studies in my professional career of 42 years is that, for the first time, the atomic building blocks of different elements constituting matter (atoms, ions, molecules) exhibit very rich and multifunctional geochemical behaviors in different thermodynamic systems (open-transitional/semi open-semi closed-closed thermodynamic systems) in different physicochemical conditions and environments, depending on their geochemical properties. The very functional and rich geochemical behaviors of the atomic building blocks of different elements constituting matter (atoms, ions, molecules) do not develop randomly. They have their own unique, common and dependent laws and rules. They exhibit geochemical behaviors in a certain order and sequence. Different thermodynamic systems, when their stability is disrupted while passing through or being affected by different geochemical and physicochemical environments and conditions, tend to become stable in systematic and regular structures with phase change, and they have behaviors and tend to balance unstable natural systems. These geochemical behaviors of the building blocks of different elements constituting matter develop in nature and everywhere in the universe. They only exist or behave in different geochemical behaviors in different thermodynamic and different physicochemical conditions from which they develop and are affected. Their main purpose is programmed not to be destroyed, and they show different geochemical behaviors to balance the different systems they are in and pass through, to become stable, to maintain their existence, etc. The atomic building blocks of different elements that make up matter cannot remain unstable for a long time. The laws of matter below are generally written by taking into account the types of energy and the changes and transformations of solid matter/rock/minerals in the solid phase and in-situ. Therefore, for the first time, the author created and wrote the first 5 laws of the constitution of the article.



Figure 3. Carbon dioxide bond (covalent bond) (CO_2): Surrounded by 8 electrons with respect to all atoms, Octet rule (taken from <https://tr.wikipedia.org/wiki/Oktet>).

The octet rule; Atomic building blocks (atoms, ions, molecules) of different elements that make up matter/rock/minerals, no matter what environment and conditions they are in, tend to increase the kinetic energy level in their final orbits/layers/orbitals to eight, like the number of electrons in the last layer in noble gases, in order to keep them at a minimum. For this reason, atoms of elements (Noble gases) with eight electrons in their final orbits move independently. They do not have the desire and will to combine with atoms of other elements and make compounds without an external force, intervention or an extraordinary situation. Apart from noble gases, atomic building blocks (atoms, ions, molecules) of other elements do not have such a chance and preference. In order to remain stable, they have to share electrons (gain and take electrons) with atomic building blocks (atoms, ions, molecules) of other elements. They combine this sharing with ionic chemical bonds (Figure 1 & Figure 2) or by using their electrons in their last orbits together with covalent chemical bonds (Figure 3) to form compounds. Hydrogen (H) and Helium (He) atoms, which are very abundant and have simple structures, are abundant in the universe, which are the ancestors of elements with different strong structures. Hydrogen has only one electron. The fact that it doubles the number of electrons to resemble helium is called the Duplet rule (binary rule).

As a result of my original studies; The constitution of the article was created and written for the first time by the author. It can be seen that there is a common necessity in all of the articles. According to the Octet rule, there are obligations to act together. However, Noble/Inert gases; are outside the scope of the obligations of the matter to act in common, unity and togetherness. The following substances, which constitute the law of matter, do not bind the Noble Gases. They can act freely and independently. They can move freely as long as there is no force or intervention from outside. The articles that constitute the constitution of the Matter; Matter has very rich and very functional geochemical behaviors that they must perform for many reasons such as existing, maintaining their stability, becoming stable, remaining stable in the systems they are in and through, and keeping the systems in balance. The first article is the basic law and is very important. It is the law that cannot be changed and cannot even be proposed to be changed. Therefore, the matter is programmed not to be destroyed. Other, 2nd, 3rd, 4th and 5th articles secure 1st article. As a result of these changes, the substances change phase. In this way, they become stable and protected. They keep the total existence of matter and energy in the universe and system constant thanks to their changes and transformations into different matter and different energy. They protect the law of conservation of matter and energy and the program of not being destroyed. All the articles that constitute the constitution of matter are directly dependent on each other.

The First Law of Matter: The atomic building blocks (atoms, ions, molecules) of different elements that make up

matter have to move together. In other words, the atomic building blocks (atoms, ions, molecules) of different elements that make up matter/rock/minerals have to move together. Because, in order to keep the kinetic energy level in the outer orbits/layers/orbitals of the different element atoms that make up matter/rock/minerals to a minimum, they have the desire and desire to increase the number of electrons in their outer orbits to eight electrons. In order to complete the electrons in their outer layers to 8, they have the necessity to exchange (share) electrons with atoms of other elements (Octet rule). This situation also reveals the necessity of the atomic building blocks of different elements to be together and together. No atomic building blocks of an element have the chance and preference to remain unstable alone for a long time. In order for them to become stable and electrically neutral, they absolutely/definitely need to share (give and take) electrons with the atomic building blocks of other elements (atoms, ions, molecules). This situation is their programming to maintain their existence. No element's atomic building blocks have the luxury of ignoring or breaching this law. Therefore, This law is the fundamental law that establishes that the article cannot be changed and cannot even be proposed to be changed [22, 23].

The Second Law of Matter: The atomic building blocks (atom, ion, molecule) of different elements that make up matter/rock/minerals have to move together in a cycle. Even if matter/rock/minerals go through different thermodynamic systems (open, transitional/semi open-semi closed, closed thermodynamic systems etc.) and different physicochemical conditions and are affected by them, they have to change and transform together in a cycle system. As a result of the changes and transformations of substances/rocks/minerals within this cycle, they change and transform into other types of substances/rocks/minerals with different physical properties (texture, structure, color, mineralogical composition, etc.) but the same chemical composition, they mature and evolve towards perfection. they diversify, become richer and proliferate [22, 23].

The Third Law of Matter: Matter/rock/minerals are obliged to change phase together. While matter/rock/minerals evolve in a cycle system, change and transform into each other, and while they pass through or exist in different thermodynamic systems and different physicochemical environments in order to maintain their existence, to become stable, to balance the system, they are obliged to change phase/state/form by changing their physical properties (texture, structure, color, mineralogical compositions) and by changing and transforming the energies into energies in different phases. However, there is no change in the total chemical composition and total energy of solid matter/rock/minerals and energies during the phase change phases. In other words, there is no increase or decrease in the total chemical composition and total energy of matter/rock/minerals. It remains constant (Law-Principle of Conservation of Matter and Energy).

The Fourth Law of Matter: During the phase changes of matter/rock/minerals and energies, their total chemical composition and total energy do not change/are preserved. Matter/rock/minerals together (1st law of matter) in a cycle (2nd law of matter), while passing through different thermodynamic systems (open, transitional/semi open-semi closed and closed systems) and different physicochemical environments or being affected by them, they change phases with their changes and transformations in the solid phase and in-situ (3rd law of matter). Transitional/semi open-semi closed thermodynamic system was first defined and named by the author, it is a fourth thermodynamic system added to the three known open, closed and isolated thermodynamic systems [25]. While matter/rock/minerals and energies change phase/state/form, their total chemical composition and total energy remain the same/constant. When matter/rock/minerals and energies change phase/state, they change and transform into matter/rock/minerals and energies that are different only in their physical properties (texture, structure, color and mineralogical composition) [22, 23].

The Fifth Law of Matter: The atomic building blocks (atoms, ions, molecules) of different elements forming matter/rock/minerals and energies cannot remain unstable for a very long time during phase changes. With phase change, they lose their stability in different thermodynamic systems and different physicochemical conditions they pass through or are affected by. They become unstable. In the shortest time period, they show different geochemical behaviors under the current physicochemical conditions, and with their physical properties showing different thermochemical properties under the current conditions, they tend to pass into a stable state/phase/form together with their changes and transformations into different solid matter/rock/minerals and energies [22, 23]. Whatever they do, in the phase where they become unstable in the shortest time period, they tend and strive to become stable by changing their physical properties together, changing and transforming into stable matter/rock/minerals and energies under the current conditions.

The Sixth Law of Matter: Matter has to adapt to different thermodynamic systems, different physical and chemical conditions and different geochemical environments that it passes through or is under the influence of. Matter does not have intelligence and memory like intelligent beings. It does not solve its problems with different models by straining its logical imagination like we do. It cannot make forward and backward predictions and plans. On the contrary, it has to remain stable in different thermodynamic systems (open, transitional/semi-open-semi-closed, closed, isolated systems) that it is in and passes through, in different physical and chemical conditions and different geochemical environments, to balance the system it is in and to adapt to the conditions of the system. This harmony has the necessity and tendency to react to the conditions that interfere with it from outside with its very rich and very functional geochemical behaviors. In order to remain stable according to the existing conditions

and circumstances in the environment, they tend to adapt and behave by showing geochemical behaviors according to those conditions. In other words, unlike us humans, they do not struggle with the physical and chemical conditions that affect them and try to eliminate them.

They are obliged and inclined to adapt to the current conditions by showing different geochemical behaviors according to the first 1-5 articles in the constitution of the Matter. Matter for harmony (they consist of atoms, ions, molecules that form the atomic building blocks of different elements); they do not struggle to eliminate the different thermodynamic systems and different physicochemical conditions that they pass through and are affected by in order to preserve their unity, togetherness and existence. On the contrary, they have the obligation to adapt to the current conditions by showing different geochemical behaviors in order to remain stable in the current conditions. Substances/rocks/minerals change their physical properties (texture, structure, color, mineralogical composition, etc.) and change into other substances/rocks/minerals that are stable under current conditions, transform, change phases and exhibit similar geochemical behaviors, thus consuming the kinetic energy of the system and tending to minimize it. In other words, they do not try to overcome the events by counterattacking the factors that affect them from outside. In this way, their existence is protected by becoming stable in the existing environment/environments, and the system/systems under their influence and within them are balanced.

As a result; in order to better understand and interpret these laws of matter, it has been suggested that the development of anatexitic magma, which forms the basis of the magmatic view, and that different magmas are formed from this anatexitic magma, from basic to intermediate and acidic (granite magma) by slow cooling, fractional crystallization and magmatic differentiation. The views that these unstable anatexitic magmas ascended and settled in the upper zones of the Earth's crust, cut the surrounding rocks and developed contact metamorphism in them, and formed granite/granitoid, gabbro/gabbroid, diorite/dioritoid, charnockite/charnockitoid and carbonatite/carbonatoid type intrusions, plutons and batholiths known to be of magmatic origin have been accepted in the Geology/Earth Sciences literature. In addition, it has been accepted that the ore deposits and mineral formations associated with the plutonic/depth rocks are also magmatic in origin (orthomagmatic, pneumatolytic, pegmatitic and hydrothermal phases etc.). In line with these views, scientific studies have been and are being conducted.

According to the author, the magmatic view is far from scientific, devoid of scientific truths and accumulations, incomplete, formed due to misleading and wrong perceptions of matter, containing contradictions, inconsistencies and complexities, contrary to the nature and laws of matter, the laws of physics and chemistry, and has become a vicious circle that is locked and stereotyped due to lack of solution. There had to be a scientific solution regarding the origin and

formation of rocks known as granite/granitoid and carbonatite, which exist in nature and are not denied. According to the author, until today, it has been thought that there are no scientific professional solutions and accumulations regarding the mentioned magmatic origin intrusions, plutons and batholiths known as depth/plutonic rocks and their related magmatic origin mineral deposits. Due to the lack of solution, scientific inadequacy (there is so much scientific data/evidence in nature and scientific studies regarding these, it is very difficult to understand why they are misinterpreted) and incorrect perceptions arising from the substance, the locked and molded granite problem (origin, formation, settlement etc.) has always been on the agenda and will continue to be on the agenda. It is locked due to the lack of solution regarding the granite problem and the lack of accurate professional knowledge on this subject.

This lack of solution has also polluted the correct information and has been reflected incorrectly in other professional branches. Due to the lack of solution, the molded, petrified, fossilized granite problem has generally been tried to be explained with wrong views and models created by using/forcing logical imagination in order to solve it. As if this were not enough, I think similar mistakes have also been carried to space. The magmatic view has not developed and will not develop in nature and the universe. The granite problem (origin, formation, settlement, etc.), also known as the "Granite Wars", which has become stereotyped due to lack of solution in a vicious circle and has survived from past to present, has caused and continues to cause temporal, material and spiritual losses. This vicious circle must be broken as soon as possible. The lack of information on this subject must be compensated for. It is recommended that this vicious circle, which is locked and stereotyped due to lack of solution and lack of information, be broken as soon as possible. Another important problem is the breaking of the incorrect, incomplete and, again, incomplete, incorrect, locked, non-evolving literature information that has been accepted in a vicious circle due to the lack of solutions regarding the evolution of metamorphic belts and regional dynamothermal metamorphism in the Geology/Earth Sciences literature [22-28]. According to the magmatic view; It is accepted in the Geology/Earth Sciences literature that unstable anatexitic magmas develop by partial melting (anatexis event) in a closed thermodynamic system where the pressure and temperature are high, in an environment where there is sufficient water (3-6% H₂O) deep in the Earth's crust. This view is not correct. However, anatexitic magmas develop whether or not there is sufficient water in the environment. Anatexitic magmas do not develop by partial melting in closed thermodynamic systems. Anatexitic magmas are indicators and proofs of the tectonism-magmatism-volcanism cycle that developed as a result of extraordinary natural disasters (opening cracks, rift systems, fault systems, weakness zones, earthquakes, volcanism, etc.). They have no relationship with magmatic intrusion, plutons and batholiths [22-28]. In the

Universe, since the terrestrial-rocky planets and satellites will be destroyed by partial melting, why did they form? Because the pressure and temperatures are very high everywhere in their mantles after a certain depth. Anatexitic magmas are unstable and irregular in structure. The atomic building blocks of different elements (atoms, ions, molecules) that make up anatexitic magma cannot remain unstable for a long time (5th law of matter and other laws).

The view that anatexitic magmas develop into basic, intermediate and acidic magmas by slow cooling, fractional crystallization and magmatic differentiation/separation at depth is not correct. The atomic building blocks (atom, ion, molecule) of different elements forming unstable and disordered anatexitic magmas are electrically charged, the kinetic energy levels in the last orbits/orbitals of the atoms have increased. Therefore, their diffusion has increased (atomic motion/vibration) and they are in an unstable state. They have a tendency to become stable in order to resemble Noble/Inert gases with 8 electrons in their last directions. In order to increase the electrons in their outer directions to eight, the atomic building blocks of all different elements need each other. Therefore, they cannot move independently of each other. They have to move together (Item 1; 5 and other items). In other words, the different elements forming the unstable anatexitic magma need to pass to the stable state/phase as soon as possible due to the electrical charge and increased diffusion due to the increasing temperatures in the environment. They cannot tolerate slow cooling and waiting for a long time. They need to crystallize and solidify simultaneously and as a whole, not by fractional/phased crystallization (item 1). They cannot tolerate differentiation into basic, intermediate and acidic magmas with magmatic differentiation. In addition, in order for minerals from anatexitic magma to crystallize, the crystal structures of the main rock-forming minerals that have formed in the current physicochemical conditions in which the magma is located and arranged under these conditions must first be formed. In their crystal structures, $(\text{SiO}_4)^{4-}$ or sometimes Al atoms can enter instead of Si atoms. In this way, $[(\text{Si}, \text{Al})\text{O}_4]^{4-}$ tetrahedrons/smooth-surfaced silicon tetrahedrons need to be formed so that different mineral types that form rocks can be formed. It is not possible for different minerals to form spontaneously in nature and in the Universe without the formation of silicon tetraded and the formation of $(\text{SiO}_4)^{4-}$ tetraded groups/chains that form the mineral crystal structures (Figure 1). What elements are silicon tetraded composed of? The most common elements in nature are silicon, oxygen and aluminum.

It is seen that silicon, oxygen and aluminum elements are consumed in the environment first for the crystallization of minerals. If it were not for the geochemical behaviors that give priority to these elements (geochemical properties; ion radii, electrical charge, kinetic energy etc.), no different light-dark colored mixed crystalline solid solution minerals could crystallize. No solid substance/rock/mineral would be

formed. So, if the atomic building blocks (atom, ion, molecule) of silicon, oxygen and aluminum elements did not have these spontaneously formed geochemical behaviors; How would they remain stable in anatexitic magma? How would they develop an acidic magma with granite mineralogical composition by enriching and separating from the magma? Because the atomic building blocks (atom, ion, molecule) of rock-forming main-secondary-trace elements become stable by bonding to the $(\text{SiO}_4)^{4-}$ tetraeder groups/chains that form all light-dark colored mineral crystal structures first. In other words, after the $(\text{SiO}_4)^{4-}$ tetraeders that are formed spontaneously in the existing physicochemical conditions develop mineral crystal chains (Figure 1); respectively (depending on the size of the ionic radii, electrical charge values, solid phase dissolution/melting temperature points, formation/recrystallization temperature points, according to the rock-forming Fe^{2+} , Mg^{2+} , Ca^{2+} , Na^+ , K^+ and Tarhan rules etc.), the atomic building blocks of the rock-forming main-secondary-trace elements become stable by binding to the $(\text{SiO}_4)^{4-}$ tetraeder groups/chains that form the crystal structures. In the thermodynamic system where the magma is present, in the physicochemical conditions and with different thermochemical properties, stable, light-dark colored mixed crystalline solid solution rock-forming main-secondary-trace minerals are formed. This being the case, how can this happen? The atomic building blocks of silicon, oxygen and aluminum elements, which are consumed for the formation of $(\text{SiO}_4)^{4-}$ tetrahedra, which form the mineral crystal structures, and these elements, which also form the granite mineralogy, will enrich with fractional crystallization and magmatic differentiation without being consumed, and eventually develop an acidic magma? I am asking about the literature on this subject? Is this possible? Will it happen? This situation means ignoring science. It is against the laws of matter, physics and chemistry laws, which were first created and written above. They are assumptions and opinions that cannot develop in nature and the universe, have emerged due to the lack of solution, are floating in the air, have been locked due to the lack of solution and have caused stereotyped views, have been put forward based on logical imagination, have nothing to do with science, and are not correct. According to this basic view, all scientific studies that have been built on this view and similar views have been caused and are being caused by material and spiritual values and time losses.

Let's continue our explanations, first of all, in order for an unstable anatexis to form deep in the earth's crust, an open thermodynamic system must definitely form. In an open thermodynamic system, it develops as a result of a weakness zone (opening cracks, rift systems, fault systems, earthquakes, volcanism, etc.) that reaches the depth where magma is formed. The unstable magma formed as a result of the weakness zone rises along the weakness zone that develops itself (magma is rich in volatile components, anatexitic magma passes through a molten/liquid phase as a result of

sudden chemical bonds breaking in the crystal structures of the minerals that form the rocks that lose their stability as a result of sudden drops in pressure and increasing temperatures. Solid rocks and minerals are forced to change phase; (item 3) volcanism and volcanic rocks develop. As a result, anatexitic magma is directly related to the tectonism-magmatism-volcanism cycle. As accepted in the Geology/Earth Sciences literature, the slow cooling of anatexitic magmas formed in a closed thermodynamic system at depth, starting from basic with fractional crystallization and magmatic differentiation, and separating into intermediate and acidic magmas, settling in the upper zones of the earth's crust, developing intrusion (intrusion) and contact metamorphism. Development of ore deposits with magmatic phase (orthomagmatic, pneumatolitic, pegmatitic, hydrothermal phase etc.), magmatic origin granite/granitoid, gabbro/gabroid, diorite/dioritoid, charnoite/charnokitoid, carbonatite/carbonatoid intrusion, pluton and batholith type pluton/depth rocks. The opinions they form are definitely not wrong or correct [22-28].

Therefore, let's continue to question and examine a little more for a better understanding of the mechanism. Let's assume for a moment that the accepted views in the literature are correct. Let's assume that basic, intermediate and granite acidic magmas were formed by fractional/stage crystallization from anatexitic magma through magmatic differentiation. How did the dark-colored mafic enclaves/ xenoliths with a density of 3-3.4 g/cm³ or mafic microgranular enclaves (MME) in the anatexitic magma differentiate? How did the dark-colored mafic, with a density of 3-3.4 g/cm³, transport and settle the mafic microgranular enclaves/xenoliths within the granites with a density of 2.6-2.8 g/cm³ in the field? Isn't it against the laws of matter, physics and chemistry that the enclaves (MME) with a high density are carried by an acidic magma with a low density? Is this possible? How will basic, intermediate and granite magmas settle in the upper zones of the earth's crust by percolating through the pores of the overlying rocks in a closed thermodynamic system without an open system and with small and large enclaves of different sizes? Anatexitic magma with an unstable and irregular structure has no other feature than its high temperature. What driving force helped it to settle in the upper zones of the earth's crust and with its enclaves against gravity? When they thought that these could not be possible, they put forward another wrong model this time. It has been suggested that mafic and mafic microgranular enclaves (MME) of different shapes and sizes in granite/granitoids were formed as a result of mechanical and chemical mixing (magma mixing and mingling) of two magmas with different chemical compositions. Or someone should inject mafic magma into more acidic magma. Because wrong views bring wrong results. Right views lead to right results.

Just like, if water and olive oil do not mix or fuse homogeneously with each other, if olive oil is injected into the water and it rises to the surface of the water again; Similarly,

magmas with different chemical compositions, different densities, basic, intermediate and acidic do not mix or fuse homogeneously with each other. They cannot stay in magmas with different densities injected into them. They go to the magmas they belong to. The constitution of the article that was made and written for the first, the laws of physics and chemistry command this. In the Geology/Earth Sciences literature, it was thought that only wrong things would be done with wrong views accepted as basic in some subjects and that they would lead to wrong results. In addition, magmas with different chemical compositions (basic, intermediate, acidic) formed in the depths of the earth's crust do not have counterparts in different plutonic/depth rocks on the Earth's surface. If these remained deep, the granite-composed magma, which is very thick and widespread in volume on the Earth's surface, should never have risen to the surface from the depths. Another view that explains this contradiction-contradiction very well is the view that "much granitoid/little rhyolite; much basalt/little gabbro" on the surface of the Earth. Rhyolite and basalts have developed extensively as a result of tectonism-magmatism-volcanism cycle developed in the open system. Gabbro and diorites have generally been determined to correspond to oceanic crust/ophiolite series originated gabbro and sheet dyke originated rock units.

In Nature and the Universe, according to the magmatic view, magmatic origin granite/granitoid, gabro/gabroid, diorite/dioritoid, charnocite/charnokitoid, carbonatite/carbonatoid intrusion, pluton and batholith type pluton/depth rocks have not developed and will not develop. The rock units in question have developed within the regional dynamothermal Tarhan metamorphism cycle that developed the metamorphic belts. The rocks in question were developed in the second and last phase of the regional dynamothermal metamorphism cycle, and were formed in the solid phase and in-situ in the Abukuma type reversed regional regressive dynamothermal metamorphism type/phase where temperatures were effective relative to pressures ($T > P$, temperatures put their stamp/seal on metamorphism). The previously existing primary source rock units (cosmic upper mantle peridotites, terrestrial magmatic rock series/oceanic crust rock series/ophiolite series rock units, ensimatic-ensialic volcanosedimentary rock series, different volcanic rocks and different sedimentary rock units etc.) and the primary source rock units developed in the first phase of the regional dynamothermal Tarhan metamorphism cycle, and the classical metamorphic rocks with metamorphic equivalents developed in the Barrow type regional progressive dynamothermal metamorphism type/stage where the pressures were effective compared to the temperatures ($P > T$, the pressures left their mark/seal on the metamorphism). In the changing physical conditions of facies and sub-facies of Abukuma type reversed regional regressive dynamothermal metamorphism, previously existing different primary source rock units and different classical metamorphic rock units, which are metamorphic equivalents of primary source rock

units, become enriched in granite mineralogy composition in solid phase and in-situ and become dominant. In this way, metamorphic origin, rootless, a kind of new modern metamorphic rocks, 3rd generation metamorphic rocks, corresponding to the 5th state of matter, metablastic rocks/metablastites/metablastic rock series and their derivatives become enriched in granite mineralogy composition and become dominant. In addition, a different type of metablastic rocks develop with the changes and transformations of pure-impure carbonate/limestone-based pure-impure carbonatoblastic rocks/carbonatoblastite/carbonatoblastic rock series and their derivatives, which have different primary rock units (for more explanatory information, see this article and [22-28]). Therefore, the magmatic view should be rejected, whereas the metamorphic view should be accepted.

5. Discussion

Carbonatites; are known as intrusive alkaline silica rock series formed from alkaline silica magma. Calcite has a high melting point (> 1340 °C, 0.1 GPa). To date; it has been suggested that carbonatites are magmatic depth rocks resulting from the differentiation of mantle-derived magmas into ferromagnesium and carbonate magmas. It has been suggested that they are formed in the form of small, rare and rare intrusions in nature; stock, head, vein, lens-shaped.

1. Carbonatites are suggested to be formed by the differentiation of silicate magma within the mantle and crust, or by the differentiation of carbonatite and silicate magma from anatexitic magma formed as a result of partial melting of mantle peridotites.
2. If carbonate magma originated from the differentiation of silicate magma, at what depth did fractional crystallization occur?
3. If carbonate magma originates from the differentiation of silicate magma, what is the nature of the calcite, dolomite and sodic parent carbonate fluid/melt?
4. How does any anatexitic magma form in a closed thermodynamic system and by what mechanism does it settles in the upper zones of the earth's crust?

There are many unresolved and impossible to solve problems regarding carbonatites mentioned above. All these problems and deadlocks; has been put forward by straining the logical imagination. However, they cannot go further than assumptions that are not possible due to the nature of matter.

In the regional dynamothermal Tarhan metamorphism cycle, temperatures are always effective in the Abukuma type reversed regional regressive dynamothermal metamorphism type/stage where temperatures are effective compared to developed pressures ($T > P$; temperatures mark the metamorphism) [25]. In closed and transitional thermodynamic systems (a fourth semi open-semi closed/transitional system was added to the three isolated, closed and open thermodynamic

systems in thermodynamics for the first time; [25], temperatures increase the entropy (disorder) of a system, light-dark colored mixed crystalline solid solution protominerals-metaprotominerals lose their stability and play an active role in the solid phase and in-situ dissolution. They cause gradual loosening, dissolution and rupture in the chemical bonds (electrostatic repulsion-attraction force, etc.) between atomic building blocks (atoms, ions, molecules). Temperatures act as accelerators in the solid phase and in-situ dissolution of mixed crystalline solid solution minerals. Parallel to increasing temperatures, a decrease in the number of neighboring atoms (coordination number) develops. Therefore, they cause loosening, dissolution and rupture in the chemical bonds between the atomic building blocks (atoms, ions, molecules) in the mineral crystal structures. Due to the gradual loosening and dissolution of chemical bonds (electrostatic repulsion-attraction force between both the different minerals that make up the rock and the atomic building blocks that make up the minerals), ions exit from the mineral crystal structures (lattices) starting from the largest ion radii to the ions with the smallest ion radii (Tarhan Rule: LIFO/Last in-First out and FILO/First in-Last out Rules; [25]). With the gradual exit of ions from the mineral crystal structures, they gradually dissolve in the solid phase and in-situ. During the gradual dissolution of minerals in the solid phase, anhydrous, unstable and disordered solid neosolutions with different chemical compositions develop, respectively.

In the changing physical conditions (P/T) of facies and sub-facies of different reversed regional regressive dynamothermal metamorphisms where temperatures are effective compared to pressures ($T > P$; temperatures are the hallmark of metamorphism), anhydrous, unstable and irregularly structured solid neosolutions with different chemical compositions develop, respectively. From the solid neosolutions formed due to the effective temperatures in metamorphism, expansion develops in the crystal lattices (structures) of light-colored, anhydrous and stable rock-forming main crystalloblast neominerals formed by recrystallization developing with metablastation. Due to the expansion in the lattices of tectosilicate (framework) structured rock-forming main-secondary-trace crystalloblast neominerals formed by recrystallization, the diagonality in the periodic table becomes important (diadohi). The ions of rare earth elements/REE and radiogenic elements, which are incompatible elements with large ion radiuses and cannot easily enter the crystal structures of silicate minerals and crystalloblast neominerals of the main rock-forming elements, which are electrified due to increasing temperatures and have increased diffusion rates (atomic movement/vibration), enter the crystal structures of expanding structured silicate minerals (orthoclazoblast etc.) and crystalloblast neominerals via diadohi and are naturally reduced/depleted from the environment. The other large part combines with the radical/root carbonate anion (CO_3^{2-}) and oxygen anions (O^{2-}) due to polarization (solid-solid chemical reactions) and develops their own stable and free crystallo-

blast neominerals, and is naturally enriched in the environment [Figure 2]. They become visible as minerals.

In addition, as stated in the geology/earth sciences literature, the view that carbonatites are depth rocks of mantle origin and are very rare in nature is also not true. On the contrary, carbonatites known to be of magmatic origin until today; in the type/stage of Abukuma type reversed regional regressive dynamothermal metamorphism where temperatures are effective compared to pressures developed within the regional dynamothermal Tarhan metamorphism cycle ($T > P$), are derived from pure-impure carbonate-origin primary source rock units, carbonate/limestone, and from the classical marbles which are pure-impure metamorphic equivalents of Barrow type regional progressive dynamothermal metamorphism where pressures are effective compared to temperatures ($P > T$) of the primary source rock units in question, and from them in solid phase and in-situ. Carbonatoblastic rock series and their derivatives/carbonatoblastites constitute the types of metamorphic rocks of metablastic origin, a type of modern metamorphic rocks, with different source rocks. Therefore, carbonatoblastic rock series and their derivatives/carbonatoblastites were determined to be a type of metablastic rock series and their derivatives named, defined and classified for the first time under the general name of carbonatoblastites, which are a type of metamorphic rocks of metamorphic origin [25, 28]. At the same time, they are the 3rd generation rocks of metamorphic origin and it has been suggested and proposed that they correspond to superionic metablastic solid matter/rock/minerals that constitute the 5th state of matter [22, 23].

6. Results

Within the regional dynamothermal Tarhan metamorphism cycle, Abukuma type reversed regional regressive dynamothermal metamorphism, where temperatures are effective compared to pressures ($T > P$; temperatures are the hallmark of metamorphism), develops widely in closed and transition thermodynamic systems and in effective temperatures. In this type of metamorphism, light-dark colored mixed crystalline solid solution protominerals-metaprotominerals and light-dark colored protolith [8] - metaprotolith rock sections lose their stability and gradually dissolve in the solid phase and in-situ. With dissolution in the solid phase, anhydrous, unstable and irregularly structured solid neosolutions with different chemical compositions develop, respectively. Due to the effective temperatures, anhydrous and irregular structured solid neosolutions formed by free different ions of main rock-forming elements with increased diffusion rates (atomic movement/vibration) and electrically charged are not stable. In the current physico-chemical conditions of Abukuma type reversed regional regressive dynamothermal metamorphism, rock-forming main-secondary-trace carbonate-silicate origin crystalloblast neominerals are widely developed by recrystallization devel-

oped by metablastation due to the effective temperatures of metamorphism from unstable solid neosolutions with different chemical compositions. They do not contain water molecules (OH^-).

In this way, in the Abukuma type reversed regional regressive dynamothermal metamorphism type, the primary source rocks, which are pure-impure carbonate/limestones and primary source rock units, are enriched and dominated by carbonate-silicate originated rock-forming main-secondary-trace crystalloblast neominerals in solid phase and in-situ within the pure-impure classical marbles, which are the metamorphic equivalents of the Barrow type regional progressive dynamothermal metamorphism, where the pressures are effective compared to the temperatures ($P > T$, pressures mark the metamorphism), and gradually change and transform into carbonatoblastic rock series and their derivatives/carbonatoblastites.

Carbonatoblastic rock series and their derivatives/carbonatoblastites and the main-secondary-trace carbonate-silicate origin crystalloblast neominerals forming the rocks in question, the pure-impure carbonate/limestone origin primary source rocks from which they are derived in solid phase and in-situ and the primary source rock units have decreased density and increased molecular volume compared to the carbonate-silicate origin protominerals of pure-impure marbles, which are the metamorphic equivalents of the regional progressive dynamothermal metamorphism of the Barrow type, where pressures are effective compared to the temperatures ($P > T$, pressures have left their mark on metamorphism).

As a result, carbonatite intrusions in the form of stocks, heads, veins, pegmatitic and lens, which are rarely seen in nature and known to be of magmatic origin, are definitely not of magmatic origin. On the contrary, they developed within the regional dynamothermal Tarhan metamorphism cycle in metamorphic belts, and in the Abukuma type reversed regional regressive dynamothermal metamorphism type/stage where temperatures were effective compared to pressures ($T > P$, metamorphism was marked by temperatures), and they were derived in solid phase and in situ from the previously existing pure-impure limestone/carbonate primary source rocks and the pure-impure classic marbles which are the metamorphic equivalents of the Barrow type regional progressive dynamothermal metamorphism where pressures were effective compared to temperatures ($P > T$, metamorphism was marked by pressures). Metablastic rock series and their derivatives/metablastites [25] have very thick and widespread outcrops in metamorphic belts of all countries, which are a new type of modern metamorphic rocks with different primary source rocks. Metablastic rock series and their derivatives, which are a new type of modern metamorphic rocks with metamorphic origin, rootless, form a type with different primary source rocks. They correspond to superionic metablastic solids/rocks/minerals, which are the 5th state of the matter. They form a type of 3rd generation metamor-

phic rocks. Therefore, the magmatic view should be rejected, whereas the metamorphic view should be accepted.

Abbreviations

P	Pressure
T	Temperature
K	Potassium
Na	Sodium
Ca	Calcium
Mg	Magnesium
Al	Aluminum
Si	Silicon
O	Oxygen
C	Carbon
H	Hydrogen
He	Helium
REE	Rare Earth Elements
Fe	Iron
Zn	Zinc
Mn	Manganese
Sr	Strontium
Pb	Lead
Ba	Barium

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Author Contributions

Niyazi Tarhan is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

The author declares no conflicts of interest.

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Research Fields

Niyazi Tarhan: Field Geology, Geological mapping, Mineralogy-petrography, Metamorphism, Metamorphic rocks, Granite/Granitoid problem, Carbonatite problem, Structural geology, Tectonism, Stratigraphy