Some industrial wastes (e.g. fly ashes, slags) contain modified minerals or substances able to react with $CO_2$ with resulting its solid bonds in the lattice of newly formed carbon minerals - carbonates.

The main advantage of mineral sequestration of $CO_2$ by the carbonatization is the safe and fast (lasting only several hours) liquidation of gaseous $CO_2$, resulting in the origin of synthetic carbonates. They have no negative impact on the living environment, and, moreover, they can be used in industrial production.

Our pilot laboratory tests of $CO_2$ sequestration using laboratory high-pressure reactor were done on the samples of the fly ash and slags after the brown coal combustion and the crushed ultramafics (serpentinite) after the exploitation of chrysotile asbestos.

The X-ray analyses revealed in the primary samples of the fly ash and slags 92-100 % of the amorphous phase without the presence of carbonates. The serpentinite samples contained nearly 90 % of serpentinite minerals, only with subsidiary content of calcite. During the reaction of mechanically (fly ash, slags), resp. thermally (crushed ultramafics) activated compounds of the waste with gaseous $CO_2$ at precisely determined P-T conditions (0.1-0.9 MPa, 20-200 °C), the new mineral phases – acid carbonates and carbonates have precipitated in the relatively short time (2-22 hours) after carbonatization, filtration and following drying with crystallization.

The X-ray analyses confirmed the high quality of newly formed mineral phases – precipitated calcium carbonate (ca 100 % $CaCO_3$) with the calcite and aragonite minerals in the ratio 9:1, originating from the sample of fly ash, resp. 3:2 in the case of the sample of slags. The $CO_2$ sequestration using serpentinite has produced the high purity nesquehonite (97 %), resp. hydromagnesite (96 %). The new products have fine-grained to powdery composition of white to white-yellowish colours, which supports their application as inorganic fillings in industrial production of plastics, rubber, cements, paints, paper, etc.

According to the journal Industrial Minerals, in February 2010 the price of the ground calcium carbonate (GCC) reached 80-103 GBP/t, the price of precipitated calcium carbonate (PCC) 320-480 GBP/t, resp. elaborated precipitated calcium carbonate up to 550 GBP/t.

The application of the $CO_2$ sequestration by carbonatization in the industrial scale would result in the lowering of the amount of industrial $CO_2$ emitted into the air and deceleration of the global warming. It will simultaneously lead to minimization of the amount of stored waste material and to production of the economically interesting carbonates usable in manifold industrial branches. By this way the methodology directly as well as indirectly contributes to the protection of living environment. Presented research corresponds with the documents of the European Commission concerning the catching and liquidation of $CO_2$ with the need to lower $CO_2$ emissions by 20 % until 2020.

## An approach to Sicilian underwater prehistory

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It is wise and necessary to say in advance that beside the well framed potential picture expressed by others, we don't have till now any real datum concerning any kind of prehistoric archaeological evidence so far found in the sea in central Mediterranean and, particularly, in Sicily if we exclude the famous cave of Cosquer not far from Marseille, some traces of Neolithic settlements in Roussillon and Grotta Verde in northern Sardinia. The evidences from Palinuro and Malta cannot be interpreted as real evidence of underwater prehistoric sites because they need further investigations.

Such consideration becomes more evident if we examine not the entire central Mediterranean region, but only the area around Sicily, between southern Italy and Aeolian islands, in the North, and Pantelleria, Lampedusa and Malta, in the South. Actually this topic of underwater prehistoric evidence of submerged settlements was widely faced in a mythological perspective. But this will be not my perspective because I will avoid to deal with the fascinating, but vague, question of the identification and position of Plato's Atlantis,

widely and deeply discussed by many authors either on the mythological/literary point of view, and on the morphological and geographical side.

Even if we go into a detailed picture of this well defined central Mediterranean area, till now, beside some stone anchors, whose chronology could range between unidentified prehistoric and historical periods, and few isolated evidences of prehistoric and protohistoric objects so far found, we don't have any real archaeological context of that period. The only consistent "prehistoric discovery" so far done in this area of Mediterranean was the controversial "wreck" of Pignataro, found nearby the eastern coast of Lipari.

Taking into consideration this insufficient archaeological situation I'll try to give some indications on the methodologies to be used, as well as on the most potential areas to be investigated with the aim to discover real traces of underwater prehistoric sites around Sicily. But it will be necessary, in order to fulfil a correct methodological and logical approach to this fascinating scientific domain, to proceed firstly with a comprehensive picture of the sporadic prehistoric and protohistoric evidences so far collected from the sea, secondly with the knowledge of palaeo-geographic background of the area under exam and finally with the indication of a research's strategy and perspective.

In this frame the recent discovery of two fossilized molars of Elephas mnaidrensis, in the sea not far from the south-western Sicilian shore will open new research horizons.

## The main types of gold deposits in Romania

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Romania is (was) known as a country rich in gold, richer as the most European countries. One area (the Gold Triangle or Quadrangle in Metaliferi Mts.) and several deposits/mines (Roşia Montană, Gurabarza/Brad, Bucium, Săcărâmb etc.) are worldwide known, due to the gold richness of the ores and in some cases as being type localities of some minerals, especially Au-Ag tellurides (e.g. Săcărâmb/Nagyag), respectively.

The above mentioned deposit type is of hydrothermal origin and have been formed in relation to the Neogene, mostly subduction-related, volcanism. In addition, there are also gold deposits located in metamorphic rocks, mostly in the South Carpathians, which are shear-zone related. The third type is of alluvial origin; for some of them the source was identified but there are numerous deposits or occurrences with diffuse or dispersed sources. The latter are also distributed mainly in the South Carpathians.

In addition to the above mentioned major gold deposit types, the gold production of Romania was based also on gold derived as by-product from polymetallic ores, mostly hydrothermal, situated in the northern part of Romania, related to the Neogene volcanism too. There are either gold-dominated deposits, e.g. Săsar, Valea Roşie, Dealul Crucii or polymetallic deposits with disseminated gold. In the Metaliferi Mts. (western part of Romania) porphyry type ores with a typical association Cu-Au, e.g. Bolcana-Troiţa, Voia, Bucium-Tarniţa etc., are also known.

The gold production of Romania was however basically related to the hydrothermal ores belonging mainly to the Gold Quadrangle in the Metaliferi Mts. The famous deposits of the area, named "the New Eldorado" by McLaren (1918) are (were) not very large. Nevertheless, the veins are concentrated on small areas, with a high to very high frequency of ore veins per area. For example, the celebrated Au-Ag telluride deposit at Săcărâmb producing 300 kg Au per year, with an average Au content of about 9 g/t and Ag of 17 g/t (the period involved is before World War II), is developed on an area of only 1 $km^2$, on a depth of about 500 m. From the same deposit about 60 t of Te have been extracted. Locally, some gold vein were extremely rich, e.g. Musariu (13-19 g/t), Valea Morii (15-30 g/t).

Roşia Montană is by far the largest gold deposit in Romania with a total of about 500 t of gold. Estimates by Roşia Montană Gold Corporation for the remaining gold to eventually be mined in open pit, range between 250 and 300 t.