Planetary dynamics of the Moon surface I.E.Harris 536 Crescent, St Lambert Quebec Canada J4P 1Z2 ieharris_374@sympatico.ca

The hydroxyl radical has been found recently in sample of rock o the Apollo 15 mission .The sites lies in the Mare Imbrium 30.391 longitude degrees east : 26..06 degrees north near the Archimedes crater it thus has large mountain ranges to the north and east being in a flood plain of basalt rock at this place. .The detection of the OH radical in a fluorapatite from this region is significant . Equally significant is the binding of the OH detected, which was in the order of 4600 ppm + or - 2000 ppm - using TOF-SIMS ..[1] The fluorapatite Ca 4 (PO 2) is in a chemistry of stress, in other words the material has been stressed. In the quantity of OH detected from the time of flight ion spectrometry it would seem that it is bound in anion sites, or roughly the OH is bound in place of the O anions

The basalt of the Moon is examined under somewhat different categories than that on the earth due to perceived differences The definition or description of basalts on the earth would be feldspathic plagioclase (calcic plagioclase) and pyroxene with or without olivine and as accessories iron -often magnetite – with quartz and and an amphibole such as hornblende or hyperstene. Two other differences in distinguishing the Moon from the earth may be common in origin from a possible process , a surface process.

The rock which has not been found on the surface of the Moon which we would expect would be the clays , micas , amphiboles and some phosphates contained on earth for the latter . One other difference that has been noticed is that very magnetic nano – iron has been picked up in these areas of lunar night and daylight, which is magnetic, and is not seen on the surface of the earth.

The atomic elements with thermodynamics of detection or testing more easily picks up the cations ,nevertheless we are able increasingly to see their anion counterparts packed in their temperature and pressure movement in positions, In the detecting of this OH radical or indeed water in the rock as HOH or OH , these movements and position are shown , as indeed the methods of detection are showing , and the most logical position for a small amount of OH is seen as substituting in the anions in the O's process OH additions. Thus in the manner of detection in thermodynamics or stress they are an attenuation of phase and electric transitions. The attenuation may be a reason why the OH is retained

Therefore from where we should find the OH hydroxyl radical because it somewhat operates in temperature and pressure thermodynamic events as an in and out mechanism or some sort of safety valve for retaining the molecule, and by a quick reaction the OH can either come back in or go out , but the molecule is able to obtain some sort of integrity .

In that event through confirmation of process by this lunar sample of a phosphate we may be able to explain the differences of the Moon in our inability to find much surface rock with the OH in it , and the nano-iron magnetism making one assumption of the earth material hematite. The assumption is from something recently noted.

[1] Francis McCubbin et al, ,Detection of structurally bound hydroxyl in fluorapatite from Apollo Mare basalt 15038.128 using TOF-SIMS, Am.. Min . Vol . 95 No 8-9 August –September 2010 at pg 1141

The said lunar sample with the OH bound in it is surface and as all lunar samples are, exposed to the to the direct radiation of the Sun and for this for fourteen days at a time and to the chilling through the equally long night. . The samples largely consisting of breccia and as the sample from the Apollo missions would be drawn from these lunar day and night surface and the breccia as almost always coming apart in cataclysmic events or staying together as the case may be but in a stressed condition.

The temperature differences in the parts of the surface of the Moon where they occur can explain both the absence of the OH bearing rocks in the samples per se and the nano-iron .

On the earth we have both terrain which uses processes of accepting temperature rises and controlling temperature rises. sand dunes for instance , or soils. From a study the soils retain their a constant temperature by using an OH process. Soils will maintain constant temperature by process that is to say that whatever the temperature above the soil , the soil maintains a temperature and that temperature is constant meaning that some energy is being used. So that this is similar to the situation of the sands of the desert which are infertile and whose temperature is permitted to fluctuate while the soil is not.

Attention is brought to the study on a natural titanium bearing hematite . A 30 degree tilt out of basal plane axis of spin orientation was found using time of flight diffraction . The material was seen as ilmenite lamellae (titanium process) acting as a hard magnetic stage and hematite acting as a soft magnetic phase .[2] . The magnetite form of iron would of course be the magnetic hard stage. What has happened is that the thermodynamic process has been attenuated with the moving of the hysteresis, that is to say it does not occur as quickly with a few other molecular effects. The assumption is that hematite in which the OH is found in this case retains a small amount of it for exactly such purpose . It may be what causes the c axis anisotropy. That with the temperature may be the cause of the nano-iron on the Moon.

The problem of the cooling off over several hundred degrees in the surface sample area of the Moon can also be visited in another paper [3] The paper shows how the OH radical could be retained in the lunar night The feldspathoid which would be a common melt rock observed down to cryrogenic temperatures at 100 degrees K. The crystal becomes squatter and there is some rotation ,only that.

We have in a particular area subject to certain conditions on the Moon found samples which do not contain such a process however in considering the regolith upper and lower the process which would be used ,say on earth soils ,- that which one might find in the lower regolith leaving the upper regolith to ambient In fact it makes likely our finding of water ice or water near the poles which is not subject to such conditions: what also has to be considered in light of work which has been done recently on earth in connection with soils[4] which seems to prove behaving as such.

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[2] Richard Harrison et al , Spin Orientation in natural Ti- bearing hematite Evidence for out of plane component , Am Min Vol. 95 No 7 July 2010 at pg 974

[3] G Diego Gatta et al , Low Temperature behavior of natural kalsinite with P 31 symmetry : An in situ single X ray diffraction study, Am Min, Vol. 95No 7 July 2010 pg 1027

[4] Micrometeorology 2010 of the author. The constant temperature of the soil over a large area was found. It was found in the OH HOH water transformations of the clay in the soil, the silica and humus operation as the neutral components. . It was in the face of earth solar radiation and other radiation type energy sources of normal and ever present nature.