

## On extra-lunar materials with chlorine and ocean water molecule exploration on the Moon

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The present study is summarized as follows:

1) Water and chlorine-bearing Fe-rich minerals with flake (rosettes) textures which are found at breccias of Apollo 14 and 16 (66095), are considered not to be contamination brought in the Earth, but to be shock-metamorphosed impact materials from extra-lunar meteoroids because author found similar texture at several meteorite fusion crusts with chlorine formed at high temperature and quenched reactions naturally and artificially.

2) The natural flake texture with chlorine is not simple weathered formation but high-temperature formation during atmosphere passing or impact reaction, because it is found only fusion crusts of meteorites (Carancas in Peru, Nio, Kuga and Minohoseki in Japan).

3) Glass formed at high-temperature shows flake texture only with some chlorine content.

4) To find water (OH status, ocean water molecule) on the Moon by lunar exploration project, new element of chlorine is considered to be new indicator of water OH status, because chlorine consists with water OH molecule in minerals.

5) The present study indicates that parent body without ocean water with chlorine reveals precursor of Fe-oxide and hydrate with chlorine and crystalline water OH which is melted to water to form ocean water finally, and which is new indicator of impact reaction to find in present time.