Lunar Origin: Is It Really Made of Cheese?

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This science project took a sample of terrestrial rock, basalt from the Flagstaff-Winslow area of Northern Arizona and compared it to lunar meteorites and samples brought back from the Apollo missions to our Moon. Comparisons are also made with Martian meteorites and meteorites from the asteroid Vesta. These comparisons were made via X-Ray Fluorescence (XRF) and a Scanning Electron Microscope (SEM). The first comparison used an Oxford ED-2000, which did a bulk X-Ray of the entire polished surface of the sample. Geology+Majors software identified chemical elements and oxides, which were favorably compared to lunar meteorites. The second comparison used a Hitachi S-4700 Field-Emission Scanning-Electron-Microscope, which found the atomic percent of constituents of 10 material phases at 300X in an area about 0.5mm by 0.4mm. Calcium-rich Plagioclase (Anorthite, related to the Genesis Rock brought back by Apollo 15), Olivine, Pyroxene, Sodium-Rich Plagioclase, Ilmenite, and Hematite were identified and compared favorably with Apollo moon landing samples. These comparisons supported the hypothesis, that our Moon was formed from our earth, and neither a part of Mars nor a captured asteroid such as Vesta.

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