Abstract for January 1971 Houston meeting

Potassium-argon ages, exposure ages and radiation history of lunar rocks.


Physikalisches Institut
University of Berne
3000 Berne, Switzerland

We measured the K/Ar age in an unseparated sample and a feldspar concentrate of the Apollo 11 rock 10003. The whole sample gave an age of \(3.68 \times 10^9\) y; the feldspar concentrate of \(3.86 \times 10^9\) y (preliminary values). These results agree well with the ages obtained by Turner with the \(\text{Ar}^{39}/\text{Ar}^{40}\) method of K/Ar dating.

\(\text{Kr}^{81}/\text{Kr}\) exposure ages were measured on 5 Apollo 11 rocks and 4 Apollo 12 rocks. A clear correlation between \((\text{Kr}^{78}/\text{Kr}^{83})_{\text{sp}}\) and \((\text{Xe}^{131}/\text{Xe}^{126})_{\text{sp}}\) is observed in these rocks. The \((\text{Kr}^{78}/\text{Kr}^{83})_{\text{sp}}\) variations reflect variations in irradiation hardness, the variations in the \((\text{Xe}^{131}/\text{Xe}^{126})_{\text{sp}}\) yield are predominantly due to neutron induced reactions leading to \(\text{Xe}^{131}\). Different classes of lunar rocks show systematic differences in irradiation history. Several possible models explaining this correlation will be discussed.