

Radioactive dating of animal bones of Jyomon-era by extremely low-level gamma-ray spectrometry.

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1999 Fiscal Year Final Research Report Summary

Radioactive dating of animal bones of Jyomon-era by extremely low-level gamma-ray spectrometry.

Research Project

Project/Area Number

10480025

Research Category

Grant-in-Aid for Scientific Research (B)

Allocation Type

Single-year Grants

Section

一般

Research Field

Cultural property science

Research Institution

Kanazawa University

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Project Period (FY)

1998 - 1999

Keywords

Radioactive dating / Uranium series / Animal bone / amma-ray measurement / Non-destructive method / Jyomon-era

Research Abstract

In order to estimate ages of animal bones excavated from shell mounds of Jyomon-era, non-destructive dating method using Ra-226/U-238 activity ratio has been examined as a new and simple dating technique. Gamma-ray measurements of animal bones were performed using extremely low background well type Ge detector set in underground laboratory (270 mwe of depth) in a tunnel of former Ogoya Copper Mine. It was found that there are three pattern of in-situ incorporation of uranium series nuclides ; (1) rather high amount of radium relative to uranium is incorporated during degradation stage of bone samples (Torihama shell mound Fukui Pref.), (2) rather

high amount of uranium is selectively incorporated into bone sample (Tonodai shell mound, Chiba Pref.) and (3) small amount of uranium without radium is incorporated in bone sample in early stage (Toi shell mound, Hokkaido).

Age of bone samples in case (2) and (3) can be calculated from Ra-226/U-238 activity ratios. Torihama sample could not be dated by non-destructive method because the concentration of Ra-226 is higher than parent uranium, therefore, age of Torihama sample was measured by alpha spectrometry. Present methods was found to give c.a. 1000 year older than archaeological ages. Even if non-destructive dating method cannot be applied to bone samples, gamma spectrometry was found to be very useful to get information on environmental circumstances of Jyomon-era.

Research Products (2 results)

All Other

All Publications

[Publications] 小村和久: "ウラン系列年代測定"月間 地球/号外. No.26. 57-61 (1999) ▼

[Publications] Kazuhisa KOMURA: "Radioactive dating using uranium series nuclides""Gekkan Tikyu" Special Issue. No. 26. 57-61 (1999) ▼

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