Neutron Radiography Application to Archaeological Objects and Fine Arts

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Radiography has been planting its roots as an essential method in research and inspection of cultural properties. X-ray radiography (XRT) is generally used. Besides, \( \gamma \)-ray radiography (\( \gamma \)RT) is applied to bronze statues and so on through which X-rays are too difficult to penetrate. Because suitable energies of X-rays are different for heavy metallic, organic or ceramic objects, their pertinent images are unable to be gotten in the same film. Only images of metallic parts or partial shadows of organic ones not intercepted with metallic ones can be thrown usually. This is a great defect of XRT or \( \gamma \)RT. NRT was developed as a method which solved this problem. It was applied to archaeological objects and fine arts, for example (a) a cast bronze statue of Sakyamuni at birth (17 to 19c. A. D.), (b) Buddhist sutras in a bronze case (9 to 11c. A. D.), (c) an excavated bronze vase (15c. A. D.), (d) an unearthed iron sword restored with synthetic resins (5c. A. D.). As for the results, fine images of the green sand of the core, organic objects or parts in or with metallic ones, which were unobserved with XRT, were made with NRT. It is expected as a method which offsets faults of XRT or \( \gamma \)RT. The present report described principles, apparatus, some examinations and the effectiveness of NRT.