

- 研究課題名 = 「Development of secure melting treatment technique for asbestos wastes using infrared radiation」
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(共同研究者も同様に記入すること)
- 要旨 (200 語以内程度) = We are developing a new on-site method to melt noxious industrial wastes including asbestos easily using infrared radiation from halogen lamps. The harmful property of asbestos originates from its long and thin fiber shape. So far, it has been very difficult to make the waste innocuous by perfect melting since the highest melting temperature of asbestos is around 1500 °C. We have tried to melt almost all of the asbestos minerals and several forms of wastes containing asbestos by this newly developed method. It is shown that all the molten samples do not contain any asbestos by means of powder x-ray diffraction measurement and phase-contrast microscopy, whose methods are authorized by JIS A 1481:2008. After improving the manufacturing process, especially for gold galvanizing, a new prototype has been built to make the mirror. In addition, simulating the optimum shape of reflecting surface has become possible by means of newly produced algorithm to achieve line-shaped radiation focusing. Mapping the high temperature region on the square substrate has been examined using two-dimensional pyrometer for designed metal or ceramics thin panel, leading to the conclusion that thermal conductivity is not essential. For the large-scale melting procedure of asbestos wastes by infra-red radiation, another new technique has been invented in this research scheme. This will enable us to make more efficient image furnace.
- キーワード (5 語程度) = asbestos、infrared radiation、melting technique、reflector