

Abstract Submitted
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In-Beam Mössbauer Spectroscopy Using Heavy Ion Beams at HIMAC M. MIHARA, Osaka Univ., K. KUBO, ICU, Y. KOBAYASHI, RIKEN, T. NAGATOMO, ICU, Y. YAMADA, Tokyo Univ. Science, W. SATO, Kanazawa Univ., J. MIYAZAKI, Nihon Univ., S. SATO, A. KITAGAWA, NIRS — The in-beam Mössbauer spectroscopy, in which a short-lived probe nucleus is introduced into a material for on-line measurement, has been applied to materials science and chemistry, because it has unique advantages in investigating microscopic behavior of extremely dilute impurity atoms or exotic chemical states in solids. The short-lived nucleus ^{57}Mn ($T_{1/2} = 1.47$ m) is useful for the Mössbauer spectroscopy of ^{57}Fe which is created following the β decay of ^{57}Mn . We have started to develop a ^{57}Mn secondary beam as the Mössbauer probe at Heavy Ion Accelerator in Chiba (HIMAC) in National Institute of Radiological Sciences (NIRS). The ^{57}Mn nuclei produced through the projectile fragmentation of ^{59}Co and ^{58}Fe beams at 500 MeV/nucleon were separated by a fragment separator and were implanted into samples. Clear Mössbauer spectra of ^{57}Fe in some materials were successfully observed under suppression of background events by anti-coincidence with beam-pulse and β -ray signals.

Mototsugu Mihara
Osaka University

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