Application of nuclear spectroscopies in material science at CNT

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Abstract: Due to the rapid scientific and technological development in the last decades, basic research in solid state physics, chemistry and material science is focused on objects and phenomena more and more confined in dimensions and time scale, well visible for the general public as well by introducing the terms "nanophysics, nanoscience, nanomaterials, etc.", often featured in the media. Researchers therefore keep searching for better and better investigative techniques. Various nuclear methods, such as Positron annihilation, Mössbauer spectroscopy, Nuclear magnetic resonance, Rutherford backscattering, neutron scattering, ion beam analytics, etc., proved themselves during the last decades as useful tools for microscopic analysis in the nanoscale region. We have been applied above nuclear methods to study materials at Center for Nuclear Techniques (Vietnam Atomic Energy Institute) since 2005. In this report, we review on study activities and highlight results of structural research obtained for carbon nanotubes, zeolites, Micro-LED, solar cell, thermal electric, memory, absorbed and nano-materials.