

# Computer Code for Materials Diagnosis Using Monte Carlo Method and Neural Networks

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**Abstract:** Non-destructive testing (NDT) is a highlyvaluable technique in evaluation and evolution of materialsand products. X-ray imaging is an important NDT techniquethat is used widely in the metal industry in order tocontrol the quality of materials. Sometimes it may be difficultto get a measurement. The simulation of X-rayimaging is often performed using computer codes. Thispaper presents a new simulation method for materialsdiagnosis. The simulation is based primarily on the X-rayattenuation law and it is performed using a combinationbetween Monte Carlo method and multi-layer perceptronneural network. The main goal of the proposed method isto obtain more detailed information about the state of thematerials.

**Keywords :** Non-Destructive testing, X-ray imaging, Materials diagnosis, Monte Carlo, Neural Network