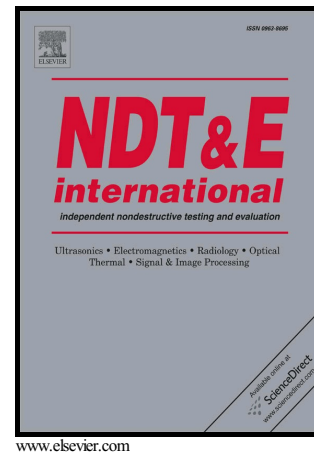


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Magnetic properties of polymer matrix composites with embedded ferrite particles

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ABSTRACT

Polymeric composite materials offer advantages for many applications because of a combination of properties, which includes high specific mechanical strength and elastic modulus and corrosion resistance. However, the non-magnetic nature of these materials impedes the use of nondestructive evaluation (NDE) techniques using magnetic sensors. In this work, glass fiber-reinforced epoxy magnetic composites were produced with the addition of 10 wt.% of cobalt or barium ferrite particles. Circular plates with notches of 1, 5 and 10 mm in diameter were produced and characterized using magnetic flux leakage (MFL) technique. The effect of particle size on the magnetic properties of the composites was also investigated for the barium ferrite. The results indicated a good correlation between the measured magnetic signals and the presence of notches. Smaller average particle sizes hindered the identification of the smallest notch.

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