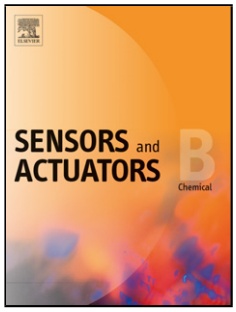

Title: Comparative studies of hybrid functional materials based on different carbon structures decorated with nano-magnetite. Suitable application as platforms for enzyme-free electrochemical sensing of hydrogen peroxide

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HIGHLIGTHS

1. Different carbon substrates were used to prepare nano-magnetite∩carbon hybrids.

2.The synthesized materials were fully characterized and used as catalysts in the electrocatalytic reduction of H_2O_2.

3. The deposition of nano-magnetite occurs mainly on in the edges of graphite flakes.

4. A synergistic effect between the metal oxide and the carbon support.

5. The sensitivity of the proposed sensor $(1.1 \pm 0.1) \times 10^5$ μA M^{-1} cm^{-2} mg^{-1} and the LOD – 0.50 nM - are higher than the pristine materials alone.

6. The proposed sensors are suitable for real sample sensing applications.