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Properties of magnetic carbon nanomaterials and application in removal organic dyes

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1 **Properties of magnetic carbon nanomaterials and application in**  
2 **removal organic dyes**

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8 **Abstract**

9 Magnetic carbon nanomaterials were prepared facilely by one step hydrothermal  
10 synthesis method using biologically regenerated glucose as carbon sources and ferric  
11 ammonium citrate as iron sources. As-synthesized nanomaterials were characterized  
12 by means of SEM, TEM, XRD, N<sub>2</sub> adsorption-desorption, VSM and XPS etc.  
13 techniques. Results show as-prepared magnetic nanomaterials are sphere particles  
14 with aggregation state and magnetic  $\alpha$ -Fe particles are enclosed by carbon matrixes.  
15 With increase of calcination temperature, the degrees of the sample aggregation  
16 decrease, whereas the average particle sizes, BET specific surface areas and saturation  
17 magnetizations increase. The carbon with graphite structure has higher adsorption  
18 efficiency than that of amorphous carbon for organic dye rhodamine B in water.  
19 Whereas the iron with amorphous structure shows higher photocatalytic activity than  
20 that of the iron with crystalline structure for the degradation of rhodamine B. And  
21 rhodamine B in water can almost be degraded completely through the combination of  
22 adsorption and photocatalysis.

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