Electronic Supplementary Material (ESI) for RSC Advances.

-Supporting information-

CONTROLLED SYNTHESIS AND CHARACTERIZATION OF ELECTRON RICH IRON (III) OXIDE DOPED NANOPOROUS ACTIVATED CARBON FOR CATALYTIC OXIDATION OF AQUEOUS ORTHO PHENYLENE DIAMINE

S.Karthikeyan, C. Judia Magthalin and A.B .Mandal G. Sekaran*

Environmental Technology Division, Council of Scientific & Industrial Research (CSIR) - Central Leather Research Institute (CLRI), Adyar, Chennai-600 020, Tamilnadu, India.

* Corresponding Author

Dr. G. Sekaran,

Chief Scientist & Cluster Chairman

Environmental Technology Division,

Central Leather Research Institute,

Adyar, Chennai – 600 020,

Tamil Nadu, India

Tel.: +91-44-24911386 (Extn: 7141)

Fax: +91-44-24452941

Email:ganesansekaran@gmail.com

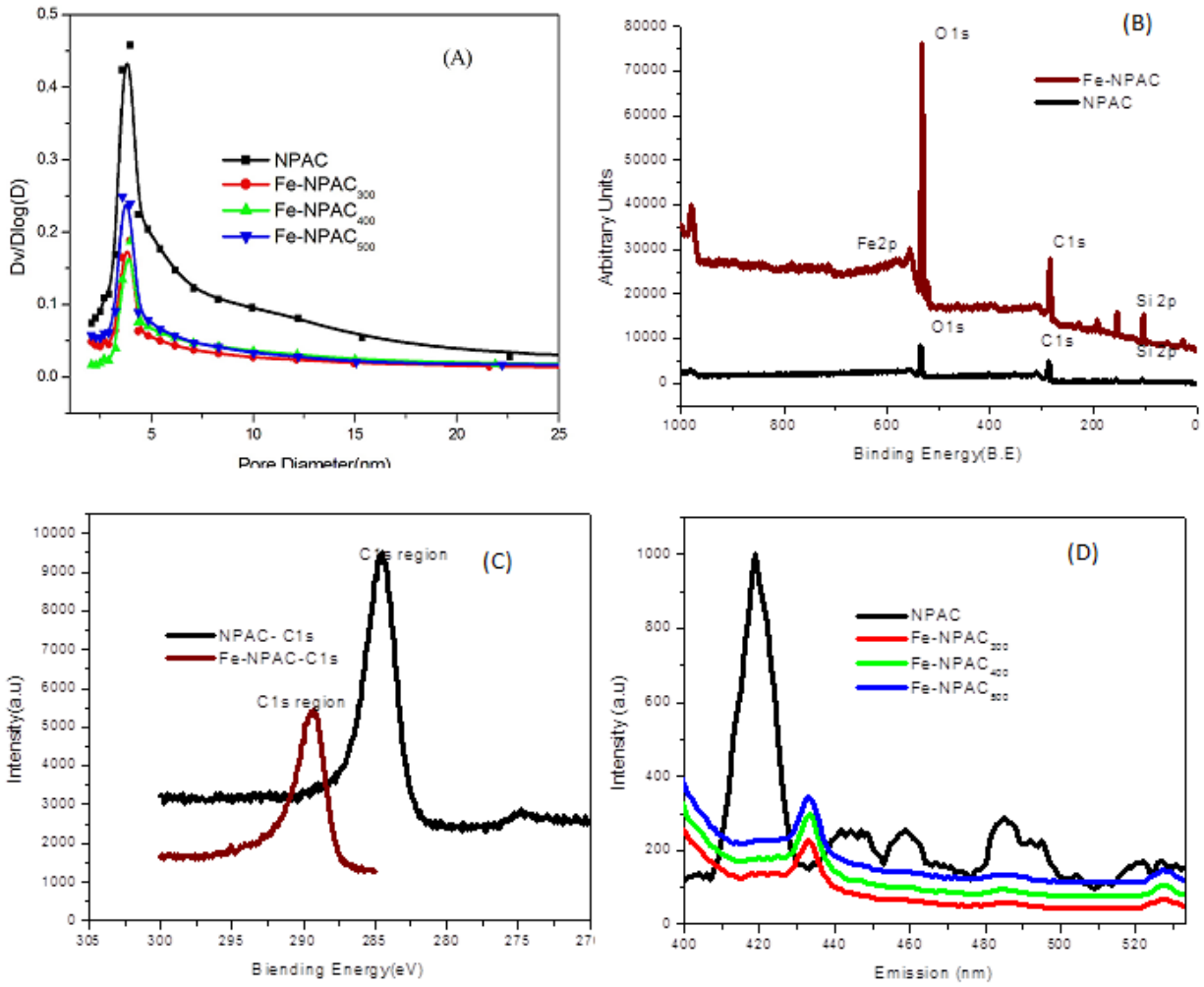

Figure S1. (A) Pore size distribution of NPAC and Fe-NPAC$_{400}$, (B) X-ray photoelectron spectra in NPAC and Fe-NPAC survey scan, (C) XPS spectrum for the C1s region for the surface of the NPAC and after doped iron nanoparticle on NPAC (wine red colour), (D) Florescence emission spectrum of NPAC and Fe-NPAC. The excitation at 220nm and it emits different wavelength (for NPAC), the excitation at 387nm, and emission-433nm (for Fe-NPAC).

Figure S1(C) The X-ray photoelectron spectrum of NPAC and Fe-NPAC$_{400}$ performed in order to determine the chemical state of the constituent elements in them. The NPAC exhibits a relatively simple C1s spectrum that is indicative of primarily carbon– carbon

functionalities. Exposure of the nanoporous to aqueous $Fe(NO_3)_3.9H_2O$ promotes the formation of carbon–oxygen functionalities on the nanoporous surface concomitant with deposition of the iron nanoparticle, as shown in the C1s XPS spectrum for the iron in carbon nanoparticle (Chastain and King,1995). This region contains several additional peaks that can be ascribed to a variety of carbon–oxygen functionalities as indicated in Figure S1 (B).

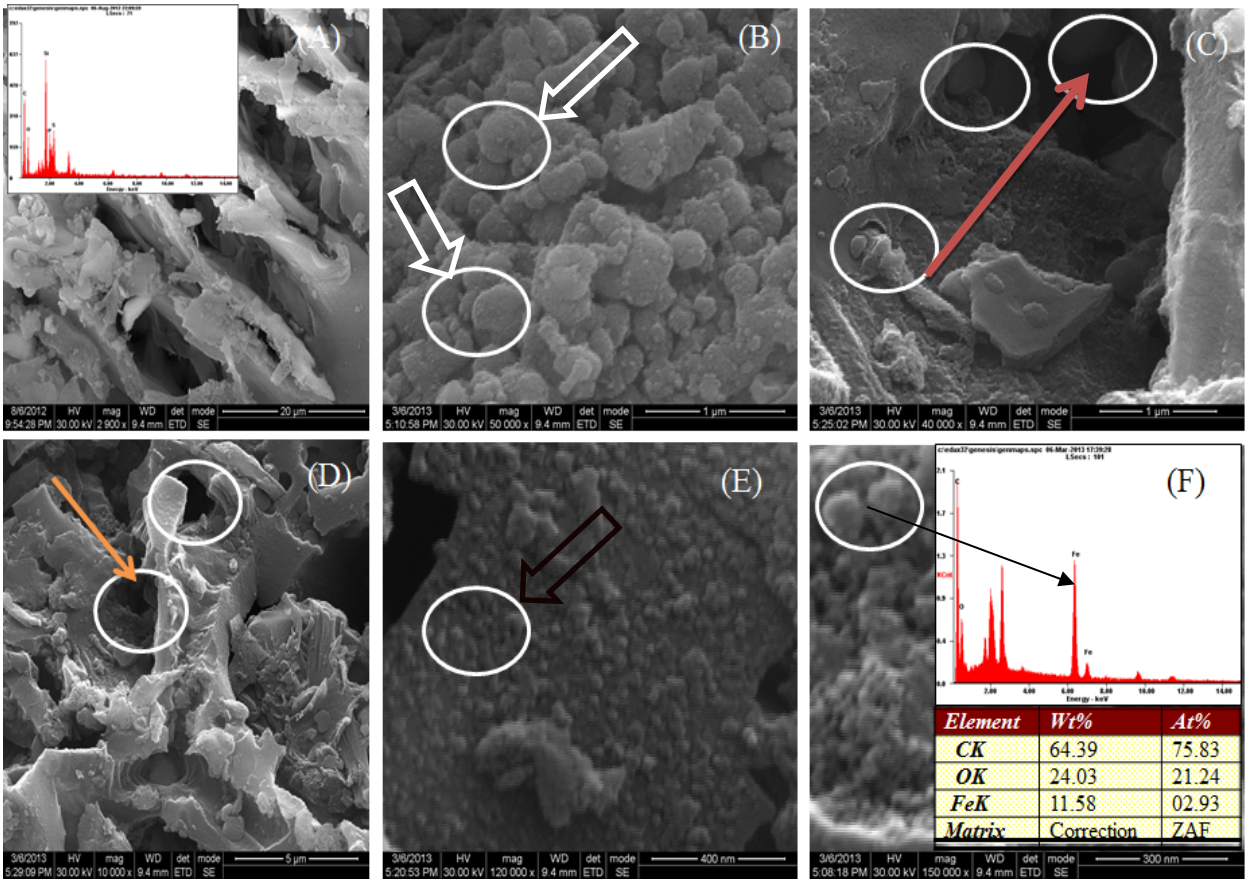

Figure S2 (A) Typical SEM image of the NPAC with EDX, (B-E) SEM images of the Iron nanoparticle@ NPAC spheres at different magnifications, (E) Fe-NPAC and the corresponding EDX, elemental composition (insets)

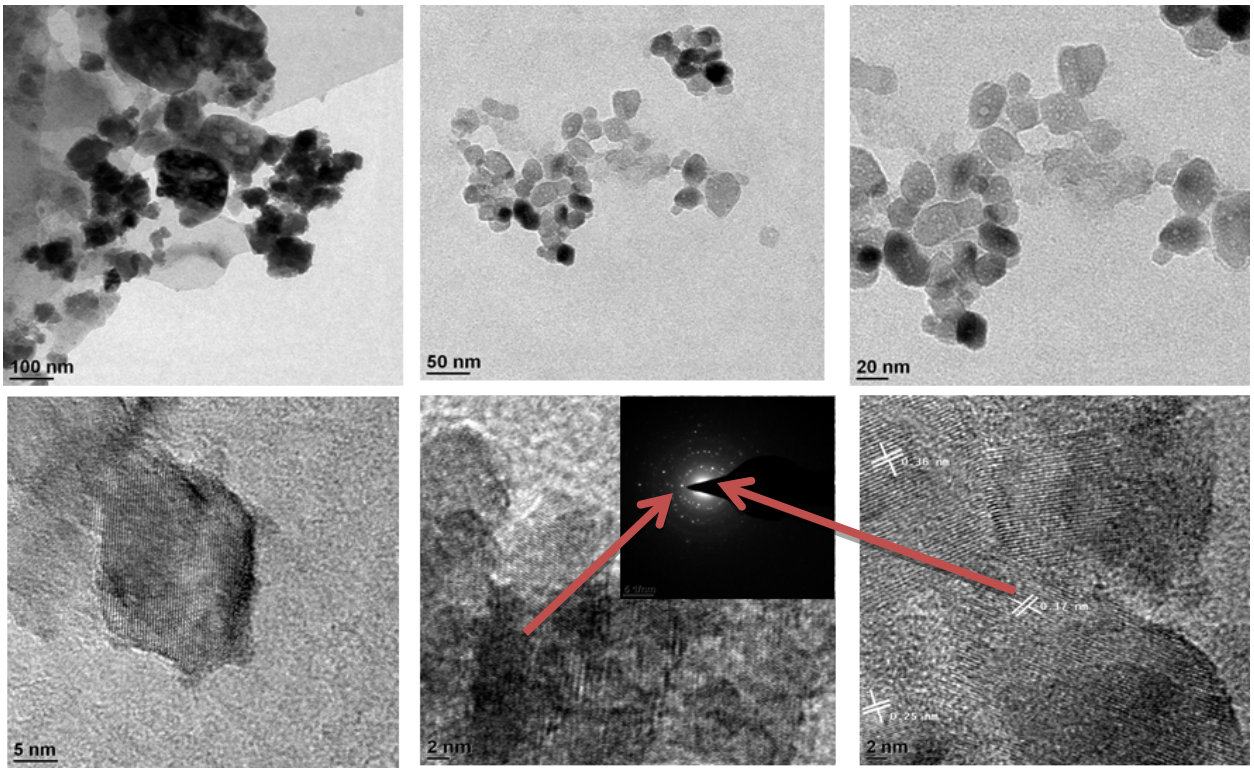

Figure S3. TEM micrographs and the corresponding SAED patterns (insets) Fe-NPAC at different magnitude.

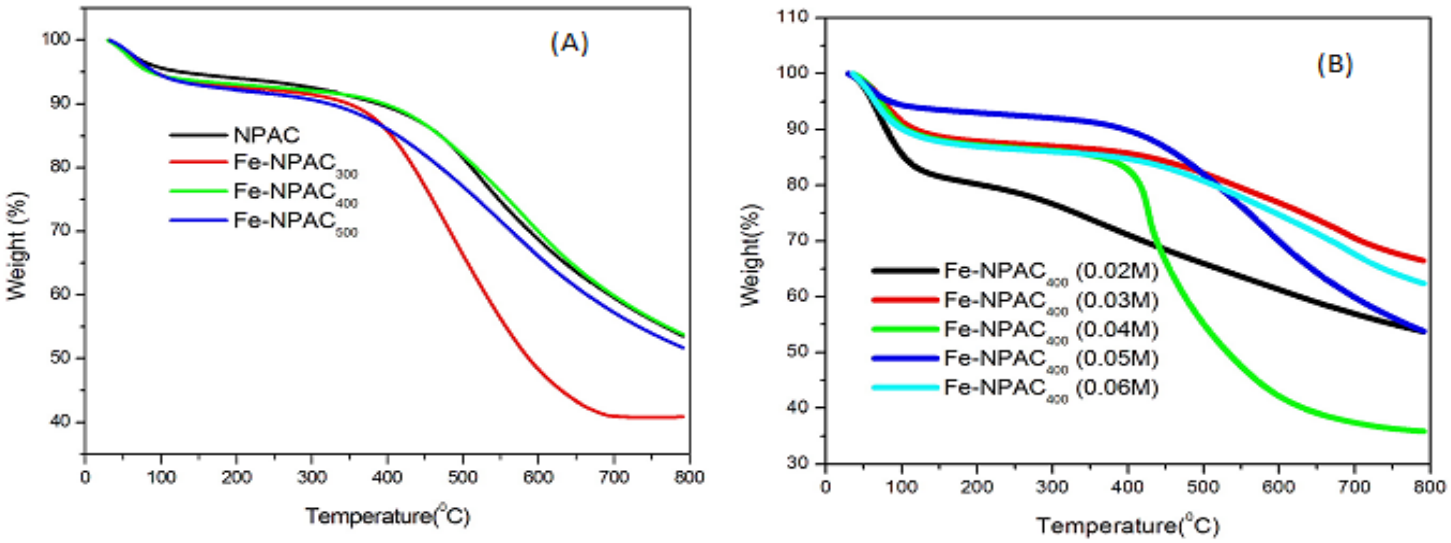

Figure S4(A) TGA spectra of NPAC and Fe-NPAC at different temperatures, (B) TGA spectrum of NPAC and Fe-NPAC at different iron nanoparticle doping(%)

Reference.

Handbook of X-Ray Photoelectron Spectroscopy; Chastain, J., King, R. C., Eds.; Physical Electronics, Inc.: Eden Prairie, MN, 1995; pp 80.