

## Development of electrochemical sensor based on functionalized carbon black/tungsten carbide hybrid composite for detection of furazolidone

Kuo-Yuan Hwa<sup>\*abc</sup>, Tata Sanjay Kanna Sharma<sup>a,b</sup>, Palpandi Karuppaiah<sup>a,b</sup>

<sup>a</sup>Graduate Institute of Organic and Polymeric Materials, National Taipei University of Technology, Taipei, Taiwan (R.O.C).

<sup>b</sup>Department of Molecular Science and Engineering, National Taipei University of Technology, Taipei, Taiwan (R.O.C).

<sup>c</sup>Center for Biomedical Industry, National Taipei University of Technology, Taipei, Taiwan (R.O.C).

### Corresponding author

Kuo-Yuan Hwa\* Email: [kyhwa@ntut.edu.tw](mailto:kyhwa@ntut.edu.tw)

Phone number: 02-27712171 ext.2419 (0), 2439, 2442 (lab).

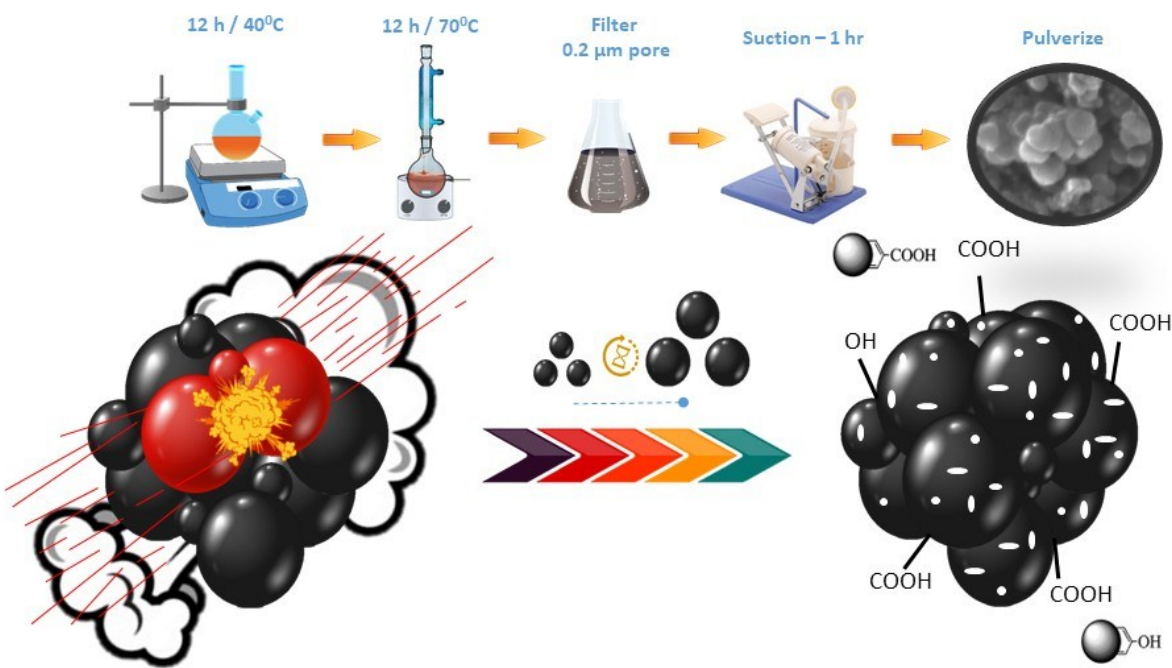


Fig. S.1. Schematic representation of carbon black to Functionalized carbon black by step by step process.

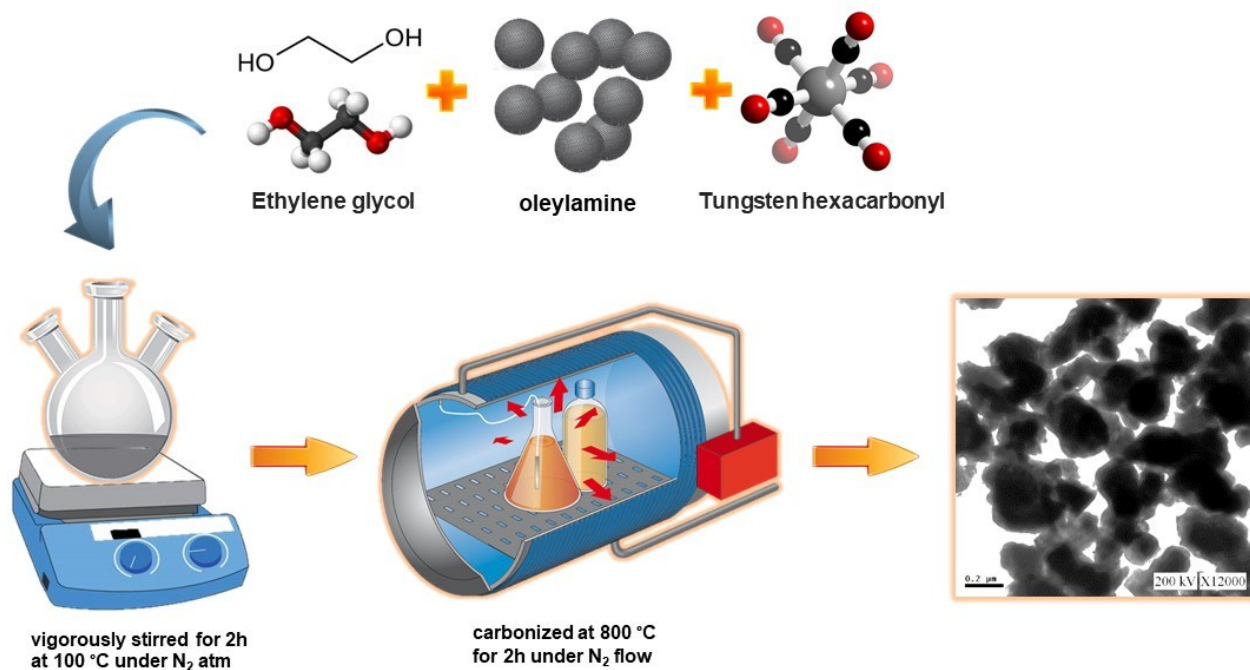


Fig. S.2. Preparation of Tungsten carbide in nitrogen atmosphere.

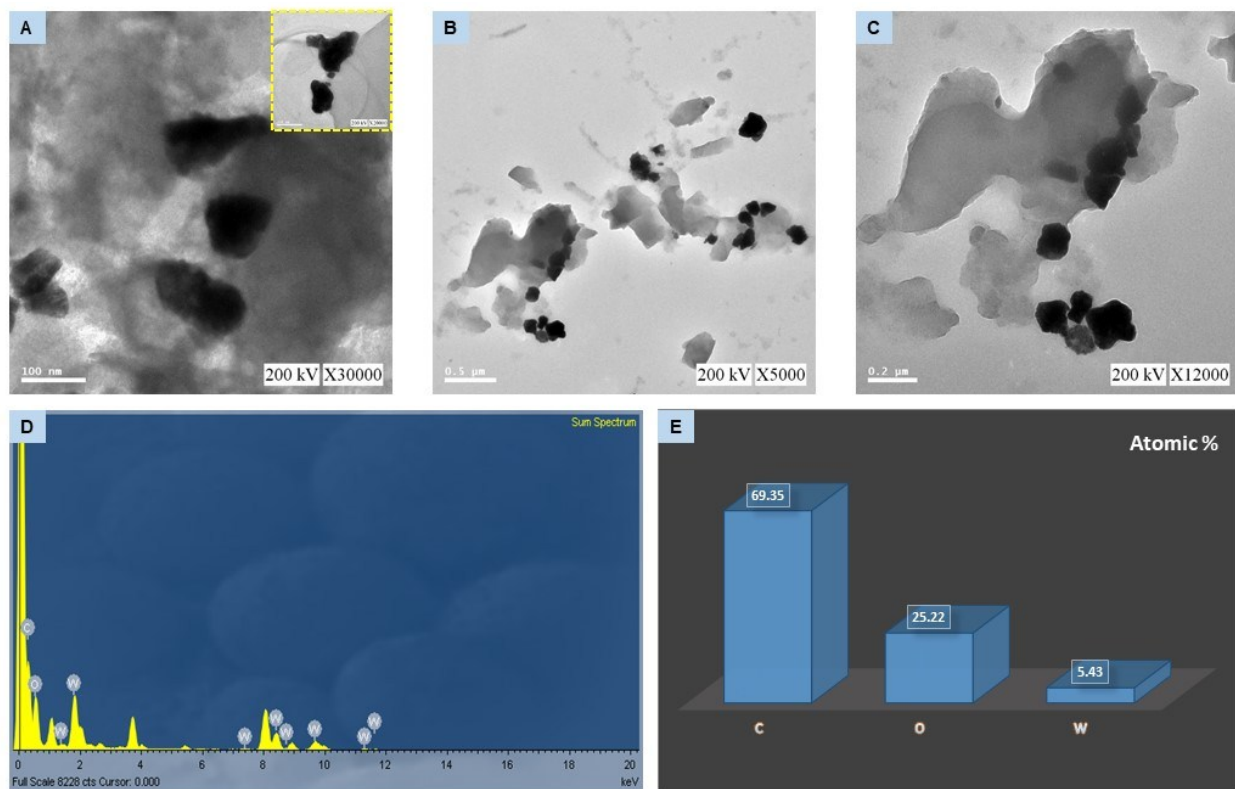


Fig. S.3. (A-C) TEM images of *f*-CB/WC composite under different magnifications, (D) EDAX analysis of *f*-CB/WC composite and (E) bar graphic illustration of atomic weight percentages in *f*-CB/WC composite

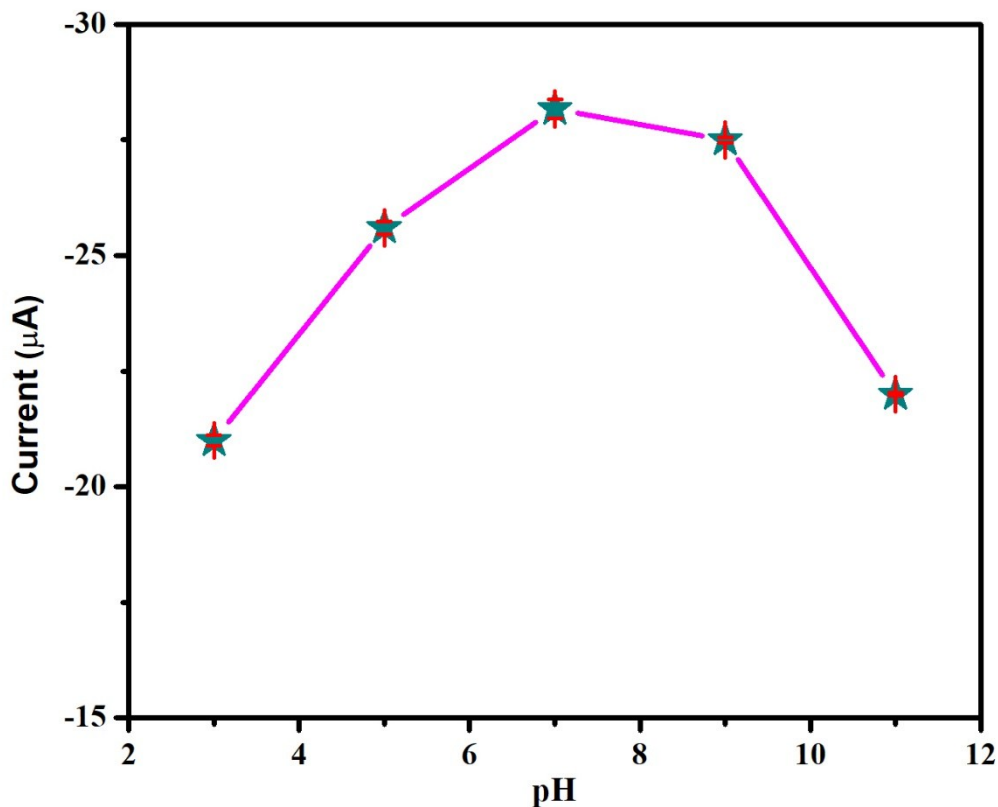


Fig. S.4. Effect of pH on the current peak (n=3).

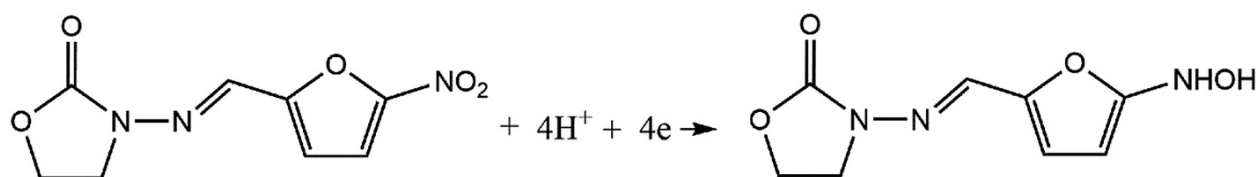


Fig. S.5. Electro-reduction mechanism illustration of Furazolidone.

Fig. S.6. Table 2 Recoveries of FU in bovine serum albumin and pharmaceutical tablet samples targeted with *f*-CB/WC/SPCE electrode.

<b>Sample</b>	<b>Spiked(<math>\mu\text{M}</math>)</b>	<b>Detected <sup>a</sup> (<math>\mu\text{M}</math>)</b>	<b>Detection rate (%)</b>
BSA	0.0	0.0	-
	5.0	4.98	98.89
	10.0	9.94	100.06
	15.0	15.16	104.8
Tablet	0.0	0.0	-
	5.0	5.06	101.7
	10.0	10.89	100.06
	15.0	14.98	102.42

<sup>a</sup> Average value of three measurements.