Electronic supplementary information

**Graphitic carbon nitride nanosheets coated carbon black as high-performance PtRu catalyst support material for methanol electrooxidation**

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\textbf{Fig. S1} A volume comparison of 80 mg powder of Vulcan XC-72R (A), C@bulk g-C\textsubscript{3}N\textsubscript{4} (B) and C@ g-C\textsubscript{3}N\textsubscript{4} NS (C).
Fig. S2 TEM images of C@bulk g-C₃N₄.

Fig. S3 Cyclic voltammograms in an Ar-saturated solution of 0.5 mol L⁻¹ CH₃OH and 0.5 mol L⁻¹ H₂SO₄ at 25°C for PtRu/C and PtRu/C@g-C₃N₄ NS catalysts during the accelerated potential cycling test. Scanning rate: 50 mV/s; Test temperature: 25°C.
**Fig. S4** The cyclic voltammograms of CH$_3$OH electrooxidation with specific activity, $i_{sp}/$A m$^{-2}$ (current density per electrochemical active specific surface area), on as-prepared PtRu/C and PtRu/C@g-C$_3$N$_4$ NS catalyst. Scanning rate: 50 mV s$^{-1}$.

**Fig. S5** Chronoamperometric curves of methanol electrooxidation in a solution of 0.5 mol L$^{-1}$ CH$_3$OH and 0.5 mol L$^{-1}$ H$_2$SO$_4$ on the PtRu/C and PtRu/C@g-C$_3$N$_4$ NS catalysts. Potential at 0.6 V.