

Supplementary Information

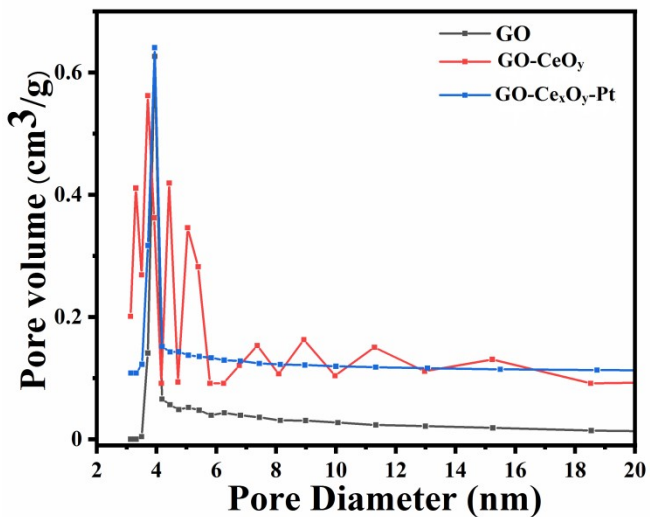
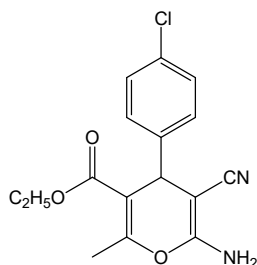
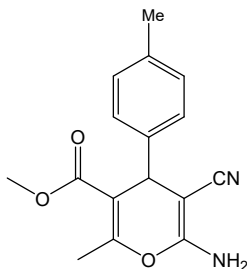


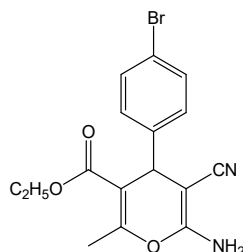
Fig. S1. BJH pore distribution curve of GO, GO-Ce_xO_y and GO-Ce_xO_y-Pt.



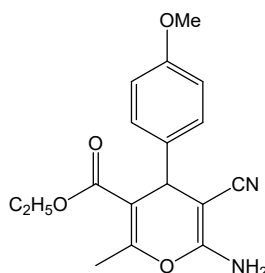
Methyl 6-amino-5-cyano-4-(4-chlorophenyl)-4H-pyran-3-carboxylate was synthesized by general procedure (mentioned in manuscript) and was purified by solvent system ethyl acetate : hexane (2 : 98, $R_f = 0.48$) (6mg, 92% yield), $^1\text{H NMR}$ (400 MHz, DMSO- d_6): δ in ppm = 7.3 (2H, dd), 7.1 (2H, dd), 6.8 (2H, s, NH_2), 5.1 (1H, s), 3.7 (3H, s, CH_3), 4.9 (1H, s) $^{13}\text{C NMR}$ (100 MHz, DMSO- d_6): δ in ppm = 39.3, 52.3, 119.4, 107.2, 156.1, 168.1, 125.3, 121.8, 132.9, 157.2.



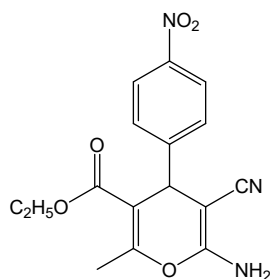
Methyl 6-amino-5-cyano-4-(4-methylphenyl)-4H-pyran-3-carboxylate was synthesized by general procedure (mentioned in manuscript) and was purified by solvent system ethyl acetate : hexane (2 : 98, $R_f = 0.48$) (7mg, 90% yield), ^1H NMR (400 MHz, DMSO- d_6): δ in ppm =7.2 (2H, dd), 7.1 (2H, dd) , 6.8 (2H, s, NH_2) ,5.1 (1H, s), 3.7 (3H, s, CH_3), 4.9 (1H,s), 2.1 (3H,s) ^{13}C NMR (100 MHz, DMSO- d_6): δ in ppm = 21.2, 39.3, 52.3, 119.4, 107.2, 156.1, 168.1, 125.3, 121.8, 132.9, 157.2.



Methyl 6-amino-5-cyano-4-(4-bromophenyl)-4H-pyran-3-carboxylate was synthesized by general procedure (mentioned in manuscript) and was purified by solvent system ethyl acetate : hexane (2 : 98, $R_f = 0.48$) (8mg, 91% yield), ^1H NMR (400 MHz, DMSO- d_6): δ in ppm =7.3 (2H, dd), 7.2 (2H, dd) , 6.8 (2H, s, NH_2) ,5.1 (1H, s), 3.7 (3H, s, CH_3), 4.9 (1H,s), ^{13}C NMR (100 MHz, DMSO- d_6): δ in ppm = 39.3, 52.3, 119.4, 107.2, 156.1, 168.1, 125.3, 121.8, 132.9, 1



Methyl 6-amino-5-cyano-4-(4-methoxyphenyl)-4H-pyran-3-carboxylate was synthesized by general procedure (mentioned in manuscript) and was purified by solvent system ethyl acetate : hexane (2 : 98, $R_f = 0.48$) (7mg, 90% yield), ^1H NMR (400 MHz, DMSO- d_6): δ in ppm =7.2 (2H, dd), 7.0 (2H, dd) , 6.8 (2H, s, NH_2) ,5.1 (1H, s), 3.7 (3H, s, CH_3), 4.9 (1H,s), 3.9 (3H, s), ^{13}C NMR (100 MHz, DMSO- d_6): δ in ppm = 39.3, 41.2, 52.3, 119.4, 107.2, 156.1, 168.1, 125.3, 121.8, 132.9, 157.2.



Methyl 6-amino-5-cyano-4-(4-nitrophenyl)-4H-pyran-3-carboxylate was synthesized by general procedure (mentioned in manuscript) and was purified by solvent system ethyl acetate : hexane (4 : 96, R_f = 0.46) (6mg, 94% yield), ^1H NMR (400 MHz, DMSO- d_6): δ in ppm =8.4 (2H, dd), 7.4 (2H, dd) , 6.8 (2H, s, NH_2) ,5.1 (1H, s), 3.7 (3H, s, CH_3), 4.9 (1H,s) ^{13}C NMR (100 MHz, DMSO- d_6): δ in ppm = 39.3, 52.3, 119.4, 107.2, 156.1, 168.1, 125.3, 121.8, 142.9, 167.2