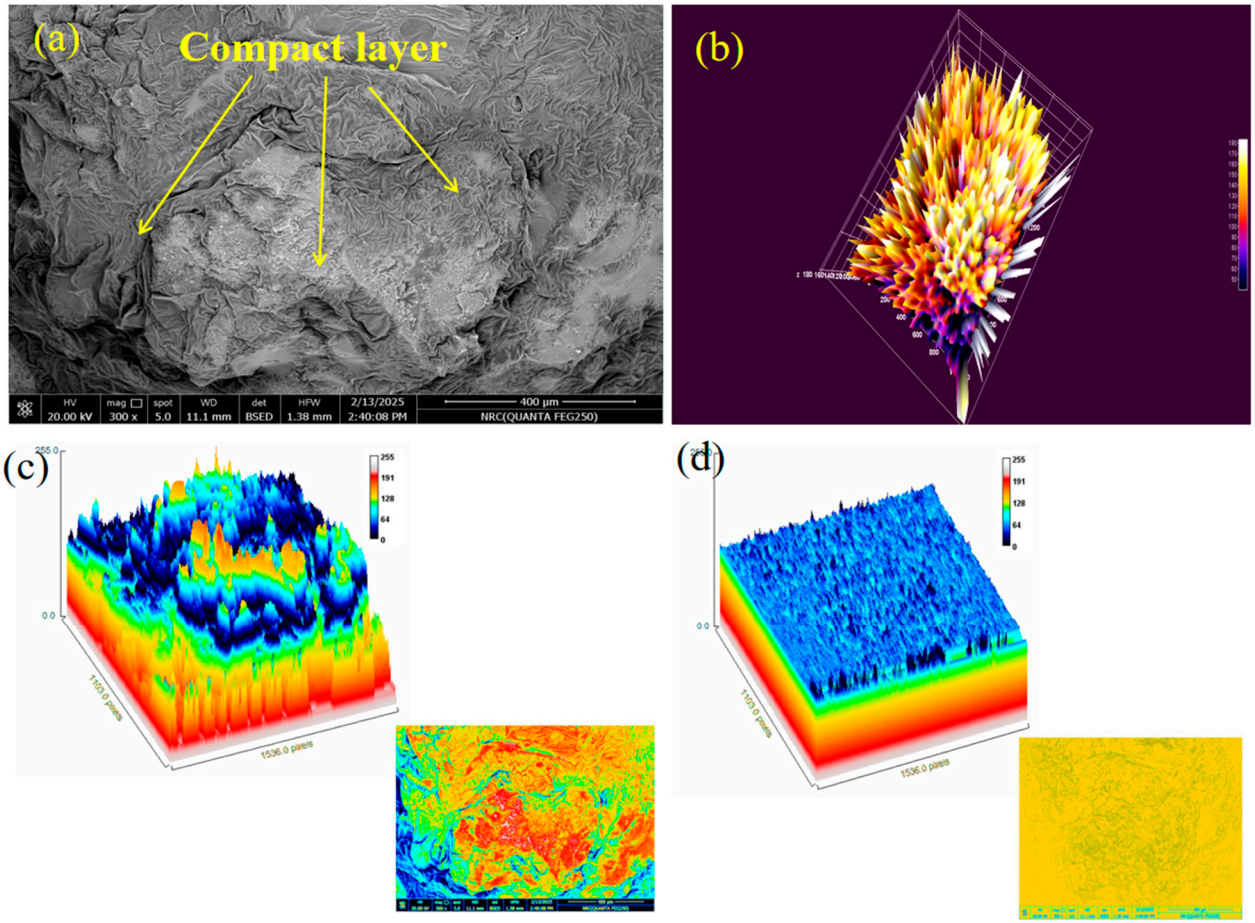
catalysts

Supporting information



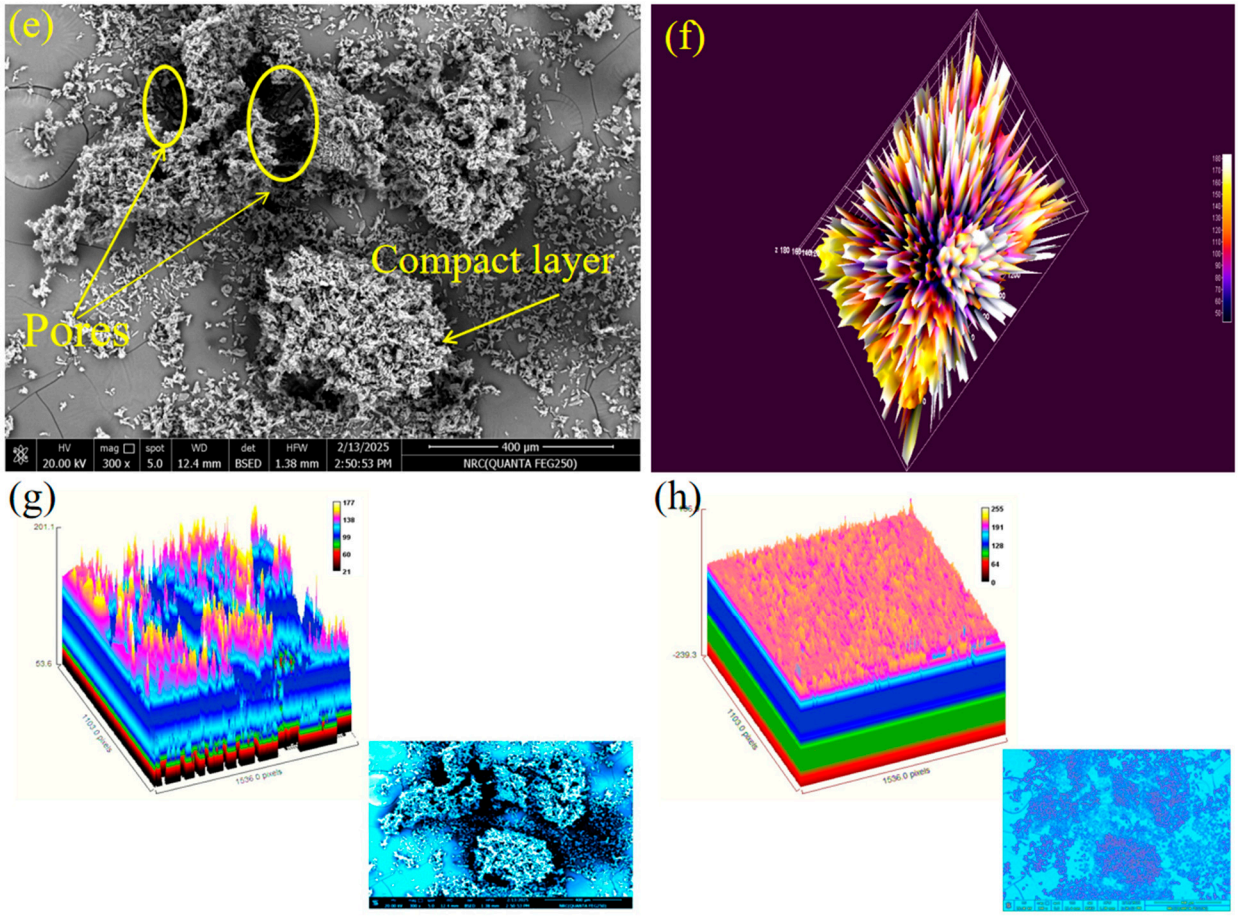
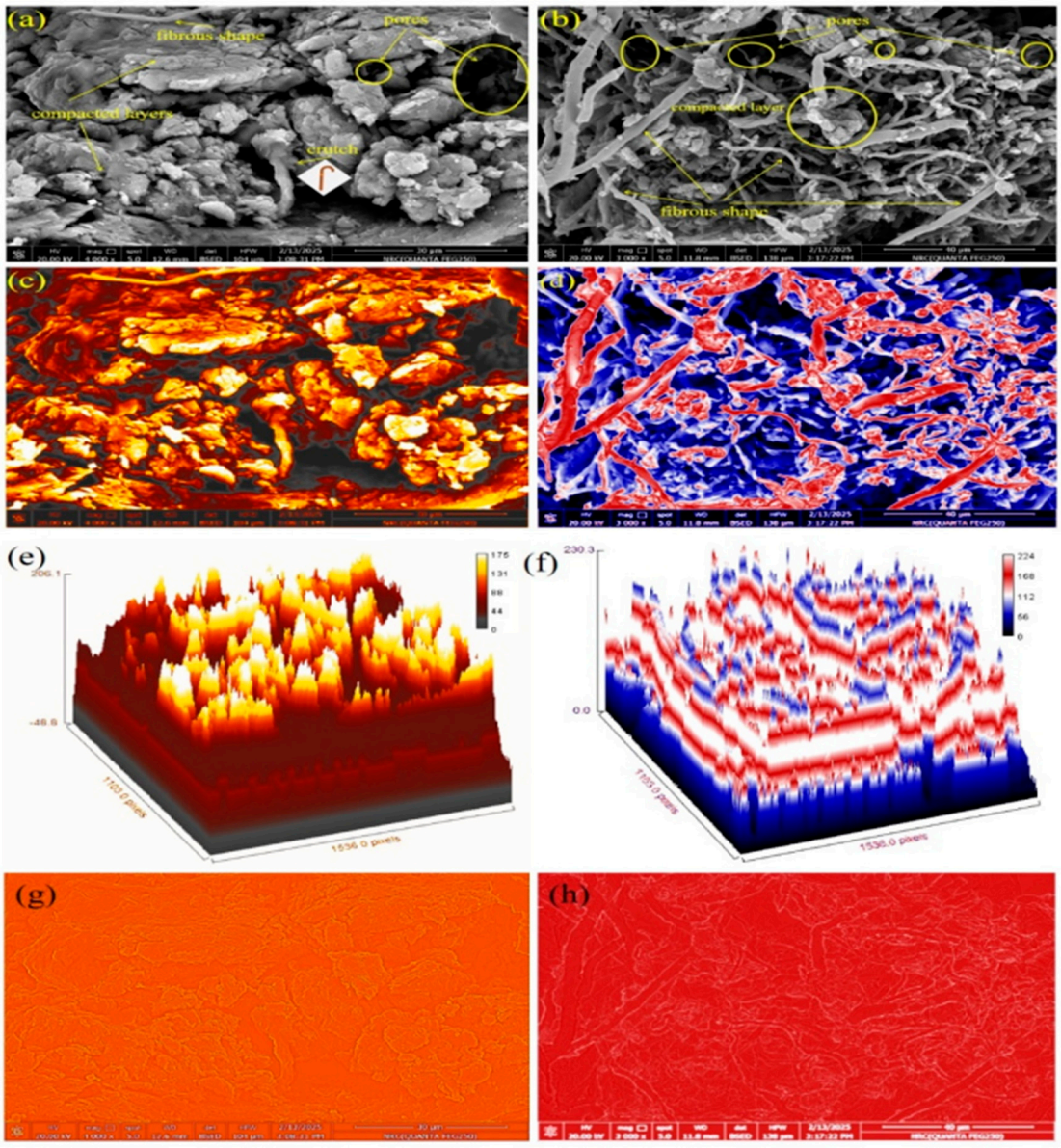


Figure S1. Surface morphology and topographical analysis of *Reishi* mushroom (RM) before and after progesterone (PG) loading: (a) SEM image of raw RM before hormone loading (RM), (b) SEM image after hormone loading (RM/PG), (c–d) waviness profiles before and after loading, (e–f) surface plots of waviness, (g–h) roughness profiles before and after loading, (i–j) surface plots of roughness, and (k–l) 3D surface plots of SEM images of RM before and after progesterone loading, respectively.

Table S1. Parameter of roughness of RM before and after hormone loading RM/PG.

Parameter	**Before adsorption**	**After adsorption**
Rq (Rrms)	32.1593	43.924
Ra	20.5581	28.5124
Rsk	-.5991	-1.8902
Rku	5.1978	6.2181
Rv	-98.596	-131.334
Rp	12.2118	16.8297
Rt	110.8077	148.1637
FPO	10.2106	13.0643

MFOV	29.6129	33.8907
FAD	74.872	154.0176
SA	4.4234	5.7682



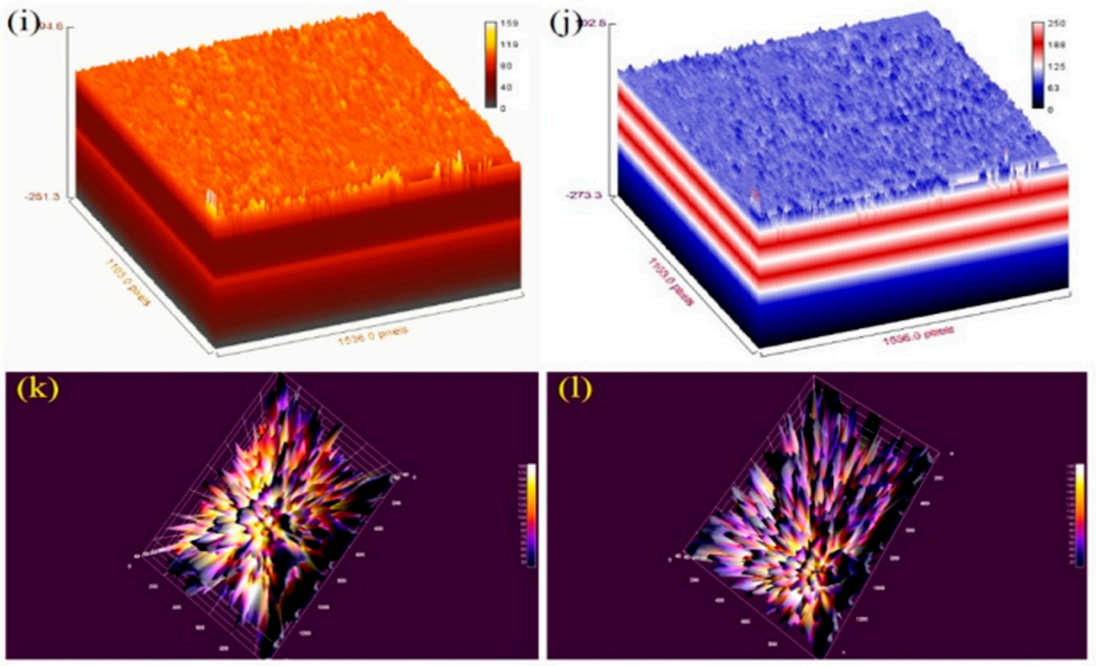


Figure S2. Surface morphology and topographical analysis of biochar/Reishi mushroom (Biochar/RM) before and after progesterone (PG) loading: (a) FE-SEM image of Biochar/RM before hormone loading, (b) FE-SEM image after hormone loading (Biochar/RM/PG), (c–d) waviness profiles before and after loading, (e–f) surface plots of waviness, (g–h) roughness profiles before and after loading, (i–j) surface plots of roughness, and (k–l) 3D surface plots of FE-SEM images of Biochar/RM before and after progesterone loading, respectively.

Table S2. Parameters of surface roughness of Biochar/RM before and after hormone loading (RM/PG) after calcination.

Parameter	**Before adsorption**	**After adsorption**
Rq (Rrms)	50.2016	47.7457
Ra	21.0203	19.0627
Rsk	-4.5199	-4.7919
Rku	18.8022	21.3365
Rv	-245.1534	-250.0479
Rp	12.5784	15.853
Rt	257.7318	265.9009
FPO	10.299	9.5692
MFOV	29.7911	28.3823
FAD	93.9909	109.1097
SA	4.3611	4.0734

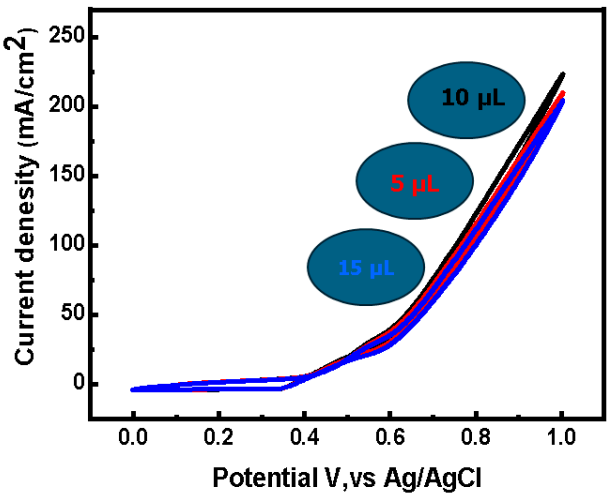


Figure S3. The effect of the drop casting on the Biochar/RM/PG working electrode.