

APPENDIX D

3 – Dimensional Diagram from RSM Analysis

D.1 The 3-dimensional diagram of xylose production from HCL pretreatment

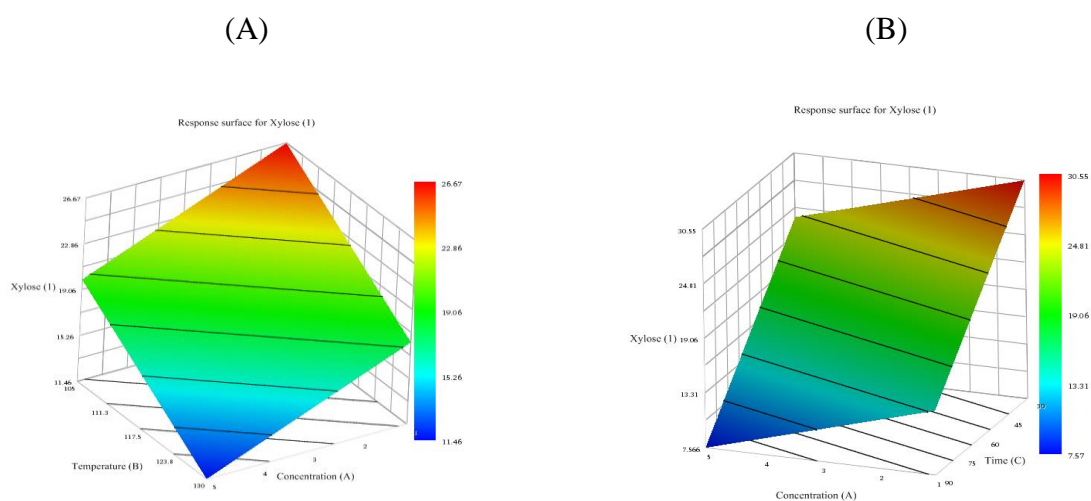


Figure D.1 the response surface plot on xylose production. A-Effect of temperature and reaction time at HCl concentration of 3% v/v. B- Effect of reaction time and HCl concentration at temperature of 115 °C.

D.2 The 3-dimensional diagram of glucose production from H₂SO₄ pretreatment

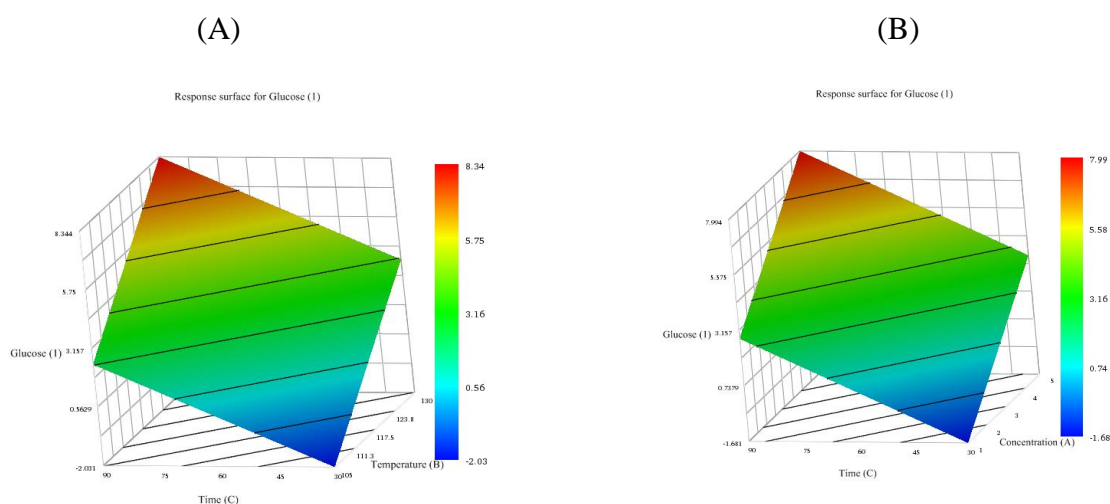


Figure D.2 the response surface plot on glucose production. A-Effect of temperature and reaction time at H₂SO₄ concentration of 3% v/v. B- Effect of reaction time and H₂SO₄ concentration at temperature of 115 °C.

D.3 The 3-dimensional diagram of glucose production from HCl pretreatment

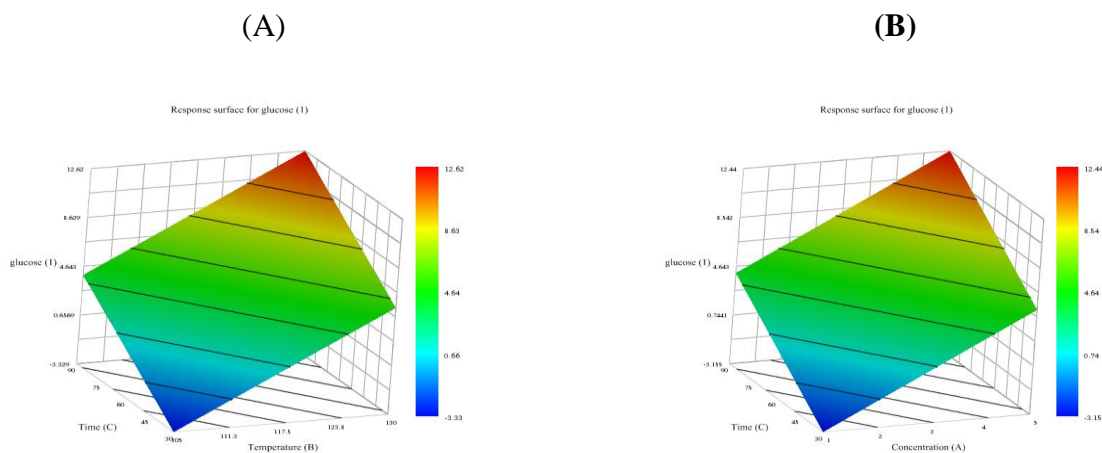


Figure D.3 the response surface plot on glucose production. A-Effect of temperature and reaction time at HCl concentration of 3% v/v. B-Effect of reaction time and HCl concentration at temperature of 115 °C.

D.4 The 3-dimensional diagram of furfural production from H₂SO₄ pretreatment

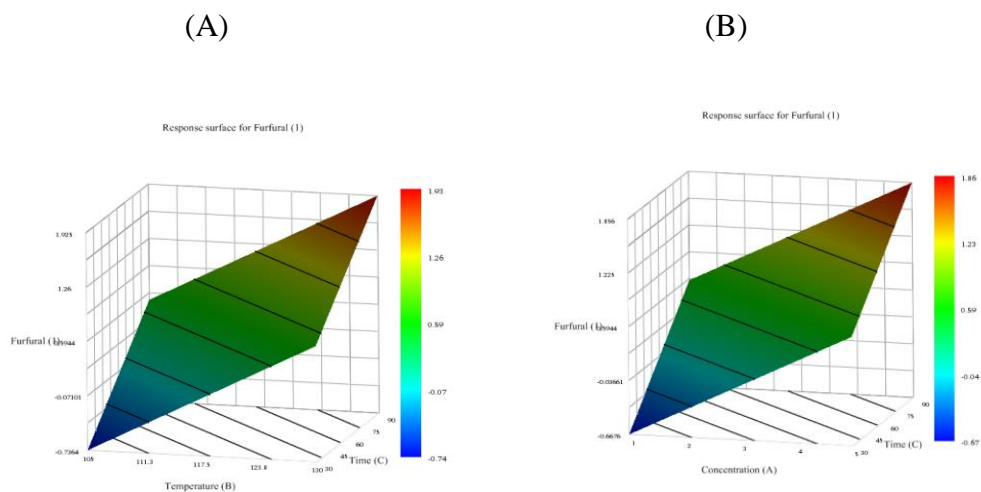
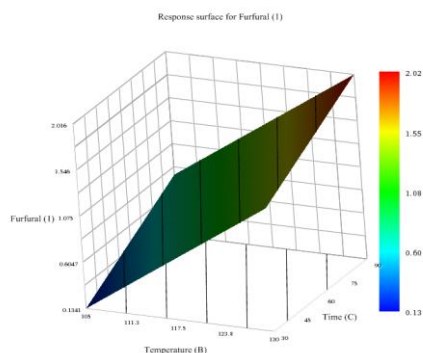


Figure D.4 the response surface plot on furfural production. A-Effect of temperature and reaction time at H₂SO₄ concentration of 3% v/v. B-Effect of reaction time and H₂SO₄ concentration at temperature of 115 °C.

D.5 The 3-dimensional diagram of furfural production from HCl pretreatment

(A)



(B)

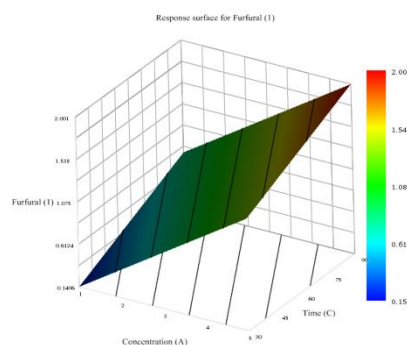
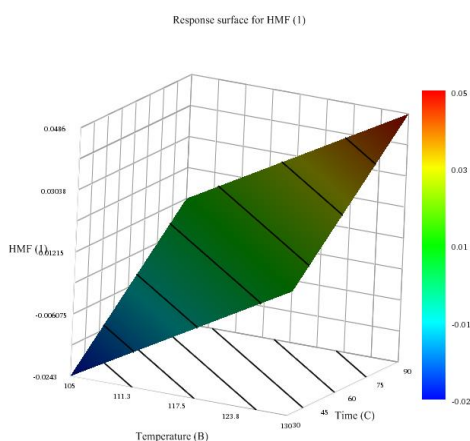


Figure D.5 the response surface plot on furfural production. A-Effect of temperature and reaction time at HCl concentration of 3% v/v. B-Effect of reaction time and HCl concentration at temperature of 115 °C.

D.6 The 3-dimensional diagram of HMF production from H₂SO₄ pretreatment

(A)



(B)

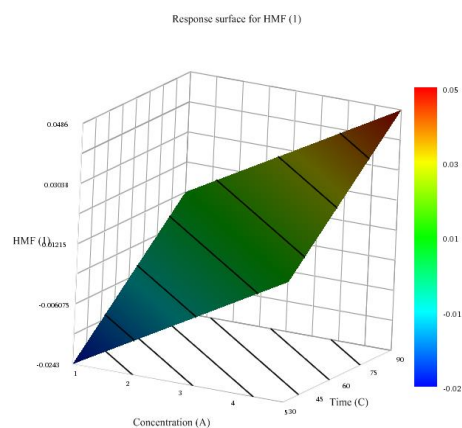


Figure D. 6 the response surface plot on HMF production. A-Effect of temperature and reaction time at H₂SO₄ concentration of 3% v/v. B-Effect of reaction time and H₂SO₄ concentration at temperature of 115 °C.

D.7 The 3-dimensional diagram of HMF production from HCl pretreatment

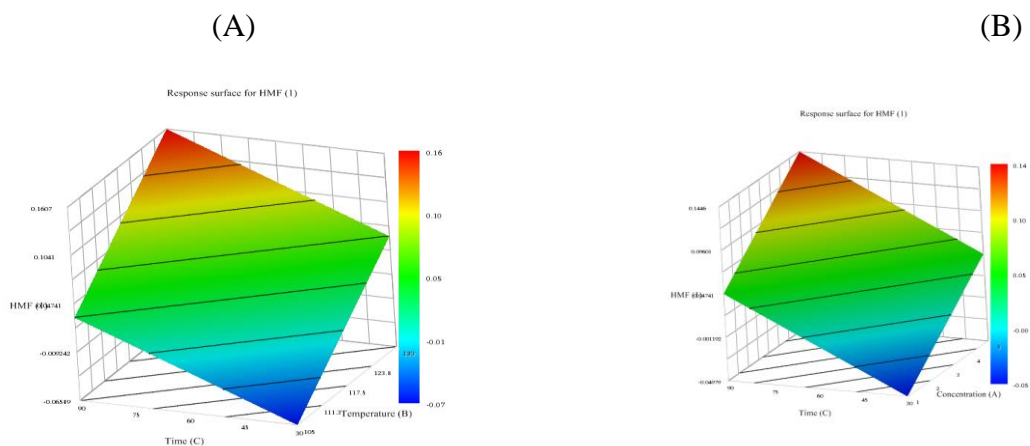


Figure D.7 the response surface plot on HMF production. A-Effect of temperature and reaction time at HCl concentration of 3% v/v. B- Effect of reaction time and HCl concentration at temperature of 115 °C.

D.8 The 3-dimensional diagram of soluble lignin production from KOH pretreatment

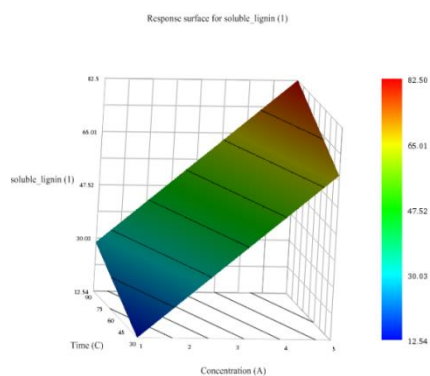


Figure D.8 the response surface plot on soluble lignin production. A-Effect of Concentration and reaction time at temperature of 115 °C.