

[☰ Outline](#)[Purchase](#)[Export](#)

Volume 5, Issue 1, Part 3, 2018, Pages 3193-3201

Isotherm and Kinetic Studies of L-Phenylalanine Adsorption onto Porous Nanosilica

Suat-Hian Tan ^a , Nurul Ain Ismail ^b[☰ Show more](#)<https://doi.org/10.1016/j.matpr.2018.01.128>[Get rights and content](#)

Abstract

Porous nanosilica material was synthesized using tetraethyl orthosilicate as the silica source and ethanol as solvent under basic condition. The product was characterized by a number of techniques, including single point BET nitrogen adsorption, field emission scanning electron microscope (FESEM) and point of zero charge (pH_{PZC}) by mass titration. Results of the studies confirmed the porous structures of the nanoparticles. The adsorption capacity of L-phenylalanine under optimized condition of pH 5.37 with 0.1 mol/L concentrations of L-phenylalanine and 2 hour contact time by using 40 mg of silica nanoparticles is 748.9 $\mu\text{g/g}$. Equilibrium data were modeled using the Langmuir and the Freundlich isotherms and both models fit well with the experimental data which suggest chemisorption and physisorption reaction. For kinetic studies, the pseudo-second-order equation was the best-fit model for describing the adsorption process.

[Previous article](#)[Next article](#)

Keywords

L-phenylalanine; adsorption; silica nanoparticle

Choose an option to locate/access this article:

Check if you have access through your login credentials or your institution.

Check Access

or

Purchase

or

> [Check for this article elsewhere](#)

[Special issue articles](#)

[Recommended articles](#)

[Citing articles \(0\)](#)

© 2018 Elsevier Ltd. All rights reserved.

[About ScienceDirect](#)

[Remote access](#)

[Shopping cart](#)

[Contact and support](#)

[Terms and conditions](#)

[Privacy policy](#)

Cookies are used by this site. For more information, visit the [cookies page](#).

Copyright © 2018 Elsevier B.V. or its licensors or contributors. ScienceDirect® is a registered trademark of Elsevier B.V.