

## 2<sup>nd</sup> International Conference and Expo on **Separation Techniques**

September 26-28, 2016 Valencia, Spain

### Effective adsorption and concentration of carnosine by nickel species within mesoporous silica

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Owing to the abundant existence, low-value food stuff, such as egg-laying hens, might be cheap resource of histidine-containing peptides, such as carnosine (Car), which have various functions with attractive application as food supplements. Herein, carboxyl group functionalized mesoporous silica of SBA-15 was synthesized to facilitate incorporating NiO, ZnO and CoO for Car extraction. Among these, Ni/SBA-15 has the highest adsorption capability. The correlation between the most significant parameters such as adsorbent dose, pH, background salts, contact times, Car concentration and the elution was optimized, and the effects of these parameters on the adsorption efficiency of Car were investigated. Thanks to the adequate pore size and high Ni loading, the adsorption capacity of Car onto Ni<sub>50</sub>/SBA-15 approached as high as 0.839 mmol (188.4) g<sup>-1</sup>. The excellent adsorption characteristics of the current adsorbents toward Car were preserved in a wide pH window and could be hardly affected by the concentration of the background salts. The pseudo-second-order rate equation effectively described the uptake kinetics. The Langmuir model exhibited a better fit to adsorption isotherm than the Freundlich model. Therefore, nickel immobilized carboxyl functionalized SBA-15 is an efficient method for recovering histidine-containing peptides from muscle slurry of egg-laying hens and makes them favorable candidates as chromatographic column materials for HCPs analysis.

#### Biography

Liming Zhao has completed his PhD from Jiangnan University (China). He is Professor and Director of a research center focusing on separation and purification technology (membrane and chromatography) at East China University of Science and Technology. He has published more than 50 papers in reputed journals and 2 monographs, and serving as an Editorial Board Member of repute.

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