

论文

苯酚和苯胺在超高交联吸附树脂上的共吸附行为

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摘要 研究了水溶液中苯酚和苯胺在超高交联吸附树脂NDA103、NDA101、NDA100上的竞争吸附和协同吸附行为. 实验结果表明, 单组分苯酚或苯胺水溶液和双组分共存水溶液中吸附质分子在超高交联吸附树脂上的吸附等温线均符合Langmuir模型. 当双组分摩尔比为1:1时, 在较低平衡浓度范围内苯酚和苯胺在树脂上呈现竞争吸附行为, 其主导机制是两种吸附质分子对树脂内外表面上 π - π 作用吸附位点的直接竞争; 而在较高平衡浓度范围内呈现协同吸附行为, 其主导机制是两种吸附质分子之间的氢键作用. 吸附温度由293K升至313K时, 苯酚和苯胺在NDA103上的协同吸附作用加强, 而在NDA101和NDA100上的协同吸附作用变化不明显.

关键词 [超高交联吸附树脂](#) [苯酚](#) [苯胺](#) [竞争吸附](#) [协同吸附](#)

分类号

COMPETITIVE AND COOPERATIVE EFFECT ON SIMULTANEOUS ADSORPTION OF PHENOL AND ANILINE FROM AQUEOUS SOLUTIONS BY HYPERCROSSLINKED POLYMERIC ADSORBENTS

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Abstract Competitive and cooperative simultaneous adsorptions of phenol and aniline from aqueous solutions by hyperemsslinked potymerie adsorbents(NDA103、NDA101、NDA100)were investigated. The results indicated that adsorption isotherills for them in both single and binary systems can be well fitted by the Langmuir equation. At the lower equilibrium concentrations,the individual adsorbed amounts of phenol or aniline on macroreticular adsorbents in single systems is higher than those in binary systems because of the competition between phenol and aniline towards the adsorption sites. It is noteworthy that at higher concentrations,the total uptake amounts of phenol and aniline in binary systems are obviously larger than the pure uptake amounts in single systems,and a large excess was noted on the particle surface at saturation,which is presumably due to the cooperative effect primarily arisen from the hydrogen bonding or weak acid—base interaction between phenol and aniline. Increasing temperature from 293 K to 313 K enhanced the cooperative effect on simultaneous adsorption of aniline and phenol on NDA103; while,the cooperative coefficients on NDA101 and NDA100 almost kept unchanged.

Key words [Hypercrosslinked polymeric adsorbent](#) [Phenol](#) [Aniline](#) [Competitive adsorption](#) [Cooperative adsorption](#)

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