Selectivity of sorbents and efficiency of adsorption

Unselective sorbent

- Random resin or activated charcoal particles

  There is a certain selectivity; the molecules need to penetrate the pores of the porous particles in order to get adsorbed; and so you can adjust the selectivity of the sorbent by altering the size of the pores. This wont get you far. All molecules will still be adsorbed as usual, but only a certain size of molecule will be able to access the full surface area, so proportionally, that molecule will be selected for. And any molecules smaller than that. So, its not particularly selective.

Selective sorbent

- Ligands, immobilized in a matrix of sorbent

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For a definitive treatment of all of this, you ought to pay homage to the gigantic and all-encompassing "Critical Care Nephrology" by Ronco Bellomo and Kellum (2009). There is also extra stuff is from the Ronco et al article "The haemodialysis system: basic mechanisms of water and solute transport in extracorporeal renal replacement therapies" in Nephrol Dial Transplant (1998) 13 [Suppl 6]: 3–9.