Department of Biochemical Engineering & Biotechnology

BBL743: High Resolution Methods in Biotechnology

Minor 1

Date: Aug 29, 2016

Marks: 100

1. Write briefly about IMA gel preparation as carried out in the laboratory class. How do you determine the metal ion capacity of the gel? **(20+10)**

2. Bovine serum albumin (BSA) is used as a model protein to find the characteristics of its IMA resin. The adsorption of BSA on IMA resin is carried out for BSA concentration in the range of 0.5 mg/ml to 2.5 mg/ml and the corresponding adsorption of BSA on the gel is given in the table below:

S. No.	1	2	3	4	5
BSA conc (mg/ml)	0.50	1.0	1.5	2.0	2.5
BSA adsorbed on IMA gel (mg/ml)	1.49	2.1	2.23	2.39	2.51

The isotherm can be approximated to follow Langmuir isotherm, find out the constants of the isotherm. If metal ion loading is given to be about 18 mmoles/ml gel, determine the average number of metal sites used up per molecule of BSA. The molecular weight of BSA is about 67,000. How can you describe the protein adsorption on IMA gel pictorially/schematically? **(30+5+15)**

3. What are the major features of IMAC, enumerate these features as described in the class and also given in your reading assignment. **(20)**

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$2.22 \times 10^{-4} \times 10^{-3}$

18×10^{-3}

1.49×10^{-3}

67000