Assignment 4

The due date for submitting this assignment has passed. As per our records, you have not submitted this assignment.

The concept of negative tanh-n is constant can be used to explain the van der waals force with an attracting saturation point. Typically, this is accomplished by considering a dispersion of solid particles and then the liquid medium is introduced to solidity by subjecting the dispersion to thermal gradient.

A laboratory experiment is performed by monitoring liquid-naphthenes dispersed with (a) polystyrene (b) nylon (c) talc (d) graphite. The liquid-naphthenes are studied with a spectrophotometer. The dispersed particles are identified by (d) to the dispersion limit (a) to the specific extinction limit, respectively. Complete the following table by filling in the entries in the last column with letter A or B to indicate the dispersion or reaction of the particle. 

<table>
<thead>
<tr>
<th>Particle</th>
<th>Grouped Size</th>
<th>Material Tension</th>
<th>Required Form or Liquid</th>
<th>Required Form or Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polystyrene</td>
<td>54</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nylon</td>
<td>6</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talc</td>
<td>155</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphite</td>
<td>304</td>
<td>D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) A

No, the answer is incorrect. Score: 0
Accepted Answers: Type: String E 2.5 points

2) B

No, the answer is incorrect. Score: 0
Accepted Answers: Type: String F 2.5 points

3) C

No, the answer is incorrect. Score: 0
Accepted Answers: Type: String G 2.5 points

4) D

No, the answer is incorrect. Score: 0
Accepted Answers: Type: String H 2.5 points

Consider a dilute dispersion of solids in a liquid. Assume that each solid has a radius of 1 micrometer in length. A small quantity of non-volatile polymer of molecular weight 20,000 g/mol is added to the dispersion of solids. The concentration of polymer in the solid-polymers mixture is 0.5 mole/liter. Assume that the dispersion is at 293 K. The interaction potential between the solid and the liquid is due to the dispersion of solid polymer. Calculate the strength of interaction when the distance of separation between the colloidal particle (b) = 20 nm and (c) = 50 nm. The Reisberg constant, m = 5.93 × 10^-17 C^2 N/m. Express the strength of interaction in terms of thermal energy (u, kT).

5) b = 20 nm

No, the answer is incorrect. Score: 0
Accepted Answers: Type: Number C 2.5 points

6) b = 50 nm

No, the answer is incorrect. Score: 0
Accepted Answers: Type: Number D 2.5 points

Answer the following questions
7) The addition of polymer in a colloidal dispersion:
   ⊗ Increases the stability of the colloidal dispersion
   ⊗ Destabilizes the colloidal dispersion
   ⊗ Stabilizes the colloidal dispersion
   ⊗ Only (a) and (c) are correct and (b) is wrong
   ⊗ Only (a) and (d) are correct and (b) is wrong
   ⊗ Only (a) and (c) are correct and (b) is wrong
   ⊗ Only (b) and (d) are correct and (a) is wrong

No, the answer is incorrect. Score: 0
Accepted Answers: Type: String E 4 points

8) The following is a type of attractive interaction that arises because of addition of polymer:
   ⊗ Van der Waals
   ⊗ Ionic interaction
   ⊗ Particulate interaction
   ⊗ None of the above

No, the answer is incorrect. Score: 0
Accepted Answers: Type: String F 4 points

9) The destabilization of a colloidal-polymer mixture occurs due to:
   ⊗ Bridging
   ⊗ Deposition interaction
   ⊗ Starch stabilization
   ⊗ Starch repulsion
   ⊗ both (a) and (b)
   ⊗ both (c) and (d)

No, the answer is incorrect. Score: 0
Accepted Answers: Type: String G 4 points

10) The destabilization of a colloidal-polymer mixture occurs due to:
    ⊗ Bridging
    ⊗ Deposition interaction
    ⊗ Starch stabilization
    ⊗ Starch repulsion
    ⊗ both (a) and (b)
    ⊗ both (c) and (d)

No, the answer is incorrect. Score: 0
Accepted Answers: Type: String H 4 points