河北大学 2007 年博士研究生入学考试试题

(套别：A_)

学科、专业	研究方向	考试科目	备注
高分子化学与物理	高分子化学相关	专业英语	化学系

~~考生可从一或二认选其~~

(一)

1. Try to translate the following paragraphs into Chinese (英译汉) (20 points)

Heating

Heating is one of the basic techniques in the chemistry laboratory. There are several common heat sources such as gas, alcohol and electric power in the chemistry laboratory. Heating methods can be divided into direct and indirect ones. To avoid possible problems from straightforward heating, use the following alternate heating methods when necessary.

Air-bath: With the principle of indirect heating by hot air, liquids can be heated above 80℃. The most common air bath in the experiment is heating with a wire gauze and a Bunsen burner or with an electric heating mantle, which is designed only for heating round-bottom flask.

Water bath: Usually a heated water bath is a convenient way of heating a liquid below 80℃. During this operation, the vessel must be immersed into a water bath so that the surface of water bath is kept higher than inside surface of the solution.

Oil bath: The usable range of an oil bath is 100~250℃. The highest temperature that oil bath can reach is depended upon what material is used. The plant oil used in the lab can reach 200 ~220℃, and liquid wax can reach 220℃. Pay attention to the safety when heating an oil-bath to prevent accidental fires or splattering from water introduced into the hot oil.

Sand bath: When a heating temperature is required to get higher than those listed above, one can often use a sand bath. Its highest operating temperature is 350℃.

2. 2. Try to translate the following phrases into English (汉译英) (10 points, 1 point for each)

1）高等有机化学 ；2）聚合反应； 3）均相催化；
4）不对称合成； 5）蒸馏； 6）交联剂 ；7）差热分析
8）重排（反应）；9）热力学控制（反应）；10）立体异构体

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高分子化学与物理	物理	专业外语	

一. 专业词汇(英汉互译)(10 分)

Phase Transition; Thermodynamics; Specific heat;

Polymer Solution; Entropy;

状态方程; 统计物理; 平衡; 质量作用定律; 配分函数.

二. 英译汉 (20 分)

Much of human history has been influenced by the availability of materials. In fact, history is divided into eras named after the primary materials used: the Stone Age, the Bronze Age, and the Iron Age. Similarly, we can assert that in the twentieth century we entered the Polymer Age.

Humans have used naturally occurring polymers, call biopolymers, for centuries without realizing that they were dealing with macromolecules. A prime example is natural rubber, which comes from the rubber-tree plant. Natural rubber was used for many centuries before it was identified as polymeric.

Chemists started polymerizing synthetic macromolecules in the middle of the nineteenth century, but they did not believe that they were creating very large molecules. The standard point of view in the beginning of the twentieth century was that these materials were colloids---physically associated clusters of small molecules, with mysterious non-covalent bonds holding the clusters together. Many scientists actually measured high molar masses for these materials, but rejected their own measurements because the values changed systematically with concentration. We now understand such changes with concentration, and the true molar mass, obtained by extrapolation to zero concentration, would have been even larger.