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河北大学 2007 年博士研究生入学考试试题

| 学科、专业 | 研究方向 | 考试科目及科目代码 | 考试时间 |
|-------|------|-----------|------|
| 分析化学  |      | 专业英语      |      |

(套别: A)

敬告: 务必将所答内容另写在答卷纸上。

一、Translate to English (10 分)

原子荧光光谱法; 原子吸收光谱法; 原子发射光谱; 分子荧光法; 化学发光法; 高效液相色谱法; 毛细管电泳; 环境分析; 材料分析; 药物分析

二、Translate to Chinese (20分)

**Future Contributions of Analytical Chemistry**

The evolution of analytical chemistry in recent years has been spectacular. The most important advances have been in the analysis of new compounds in even smaller concentrations, in the development of instruments having even better resolution and sensitivity capacities, and in miniaturization, which is Analytical chemistry is a science that advances in line with the advances made in other fields. An obvious example is nanobioelectronics in which nanomaterials are applied to the analysis of biomolecules. Nanobioelectronics is a rapidly developing field aimed at integrating nano- and biomaterials with electronic transducers. These include microfluidic devices, the so called lab-on-a-chip, nanoparticle-based bioassays, the bioelectronic detection of biomolecules such as nucleic acids and proteins, electrochemical sensing devices for clinical and environmental monitoring, in-vivo glucose biosensors, etc. These developments will clearly aid analytical chemistry in the search for solutions to new problems.reaching nanoscale levels. The development of microsystems or lab-on-a-chip will provide fast response, high sensitivity and selectivity, aspects that can result, for example,

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in analyzers providing a time warning and alarm in the case of field-deployable analyzers for explosives or nerve-agents. Although lab-on-a-chip instruments are being manufactured with moderate success, widespread use of these systems is likely in the future. In a not very distant future, we may well find that the demands of society extend beyond the requirements just for genetic analysis to include analysis of target analytes such as biological markers and the characterization of products to warrant quality. There is no doubt that the integration of the technology described above (together with biotechnology and new screening platforms) will change the way we live our everyday lives.

During recent years, we have observed how the electronics industry have changed the world, but probably even bigger personal changes will happen when microsystems will be integrated in our water taps, or when people will be able to establish their own health profile (to test, for example, for indications for signs of cancer or cardiac arrest), when cars will control the emission of contaminants, or when a microarray will monitor the amount of bacteria in foodstuff. However, there is still a long way to go before this will happen.