

# Germany

(645)

## UNITWIN/UNESCO Chairs Programme

### Progress Report

Period of activity: June – December 2005

#### UNESCO Chair in Macromolecular Characterization

Host institution: Darmstadt University of Technology (TUD), and the German Institute for Polymers (DKI)

Report established by: Prof. Dr. Harald Pasch, Chairholder, and Head of the Analytical Department of the German Institute for Polymers

### I. Activities

#### 1. Education/Training/Research

- Series of lectures on polymer characterization for graduate students at TUD.  
Duration: throughout the academic year.  
Target groups: 15-20 male and female graduate students.  
Geographical coverage: students from Eastern and Western Europe, Asia, Africa.
- Series of lectures on polymer characterization for undergraduate and graduate students at University of Stellenbosch, South Africa.  
Duration: two times per year, one week each.  
Target groups: 15-20 male and female undergraduate and graduate students.  
Geographical coverage: students from Africa, mainly South Africa.

#### Research

- Projects to obtain MS in chemistry with major in macromolecular chemistry.  
Duration: 6 months per MS project.  
Target groups: male and female undergraduate students.  
Females: 1 Cameroun, 1 South Africa.
- Projects to obtain PhD in chemistry with major in macromolecular chemistry.  
Duration: three years per PhD project.  
Target groups: male and female graduate students.  
Males: 1 Pakistan, 2 South Africa, 1 Ghana, 1 France, 1 Spain, 3 German.  
Females: 2 South Africa, 2 Germany.

#### 2. Interuniversity Exchanges/ Partnerships

UNESCO Center for Macromolecules at the University of Stellenbosch, South Africa, 3 MS and PhD students were received for a total duration of 6 months.

## **II. Outcomes**

After the official inauguration of the Chair (June 2005), the activities have mainly concentrated on establishing the necessary infrastructure to conduct MS and PhD courses for students from developing countries. All teaching facilities are available and up to date. More laboratory space must be allocated to run all the research projects that are planned. Already in the first year, a significant number of students, mainly from Africa, visited the Chair and conducted some experimental work for their MS and PhD theses.

## **III. Forthcoming activities**

As mentioned in the introduction, a network for polymer characterization between different universities and other academic institutions will be created. This network aims at establishing education and training facilities and using a broad range of methods for polymer characterization which are required to upgrade research in polymer synthesis and technology. In parallel to upgrading the knowledge and experience of the scientific and technical personnel by teaching and training, the analytical hardware must be upgraded.

The methodology to be followed is as follows:

1. In a first step, information is collected on what kind of training and education facilities and analytical equipment is available in different participating institutions and how it is used. To acquire this information, contact persons will be identified.
2. By visiting the participating institutions, the type, quality and capabilities of the curricula and training facilities as well as available equipment and personnel will be evaluated and a general overview on the research activities in polymer science and technology shall be established.
3. In parallel to Point 2, curricula for undergraduate, MS and PhD courses are established at DKI/TUD and specifically designed for students from developing countries.
4. To upgrade the knowledge of the scientific and technical personnel at different institutions and to initiate new activities in polymer characterization, courses on polymer analysis and characterization shall be thought at partner universities of developing countries. In the initial stage 1-2 week introductory courses are proposed.
5. For a proper flow of information, regular seminars on polymer analysis and characterization shall be organized. These seminars are conducted by the newly formed UNESCO Chair or could be a part of the annual UNESCO School & Conference on Macromolecules organized by the University of Stellenbosch, South Africa.

In a later stage, workshops with practical training shall be organized for different analytical techniques. These workshops will be organized by different institutions to strengthen the cooperation within the network.