

## **POL-I-01**

### **Polymer Research in Thailand: Past, Present and Future**

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Before 1980 there was little polymer research in Thailand. The development of the petroleum and petrochemical industries in Thailand, beginning in 1980, may be regarded as the “catalyst” for development of polymer research in Thailand. This was supported and strengthened by 1) the Thai Government initiative to send more than 1,000 scholarship students to study abroad as part of human resource development programme in the fields of materials science and technology 2) The establishment of the National Metal and Materials Technology Center (MTEC) in 1986 to provide funding for polymer research and research facilities in universities and research institutes.

Polymer research and development in Thailand has been conducted to support the petrochemical and related downstream industries including the plastics, textiles, coatings and adhesive industries. The other industry which also drove polymer research in Thailand is the natural rubber industry. Therefore, polymer research in the past, and even presently, was not advanced but rather involved established technologies such as polymer blends and composites, chemical modifications of polymers, biopolymers, biodegradable plastics, polymer compounding, polymer recycling, utilization of agricultural and industrial wastes and textile finishing. The objective of the research is mainly utilization of the country's natural resources such as chitin, chitosan, natural fibres, starch and, in particular, natural rubber.

Recently, more advanced polymer research begins to take place as the advanced materials industries are beginning to be established in Thailand such as the biomedical, the pharmaceutical and the electronic industries. Global interests in nano-materials and nanotechnology also initiated widespread research in these fields in Thailand but the work are rather academic in nature as there are lacks of modern equipment necessary for serious research in this field and also the nanotechnology-based industry in the country.

Polymer research in Thailand so far has been rather scattered and most are not connected with industrial applications or social benefits. The research subjects are not focused especially on the ones which are competitive for Thailand. This is the area which will have to be improved in the future. Natural rubber (NR) is an example of natural resource which Thailand has real competitive advantage. Sustainability of NR is extremely important not only for Thailand but for the whole world. Therefore, research into NR all along its value chain should be increased. The other industries which should be competitive for Thailand are the food and agricultural industries. Therefore, research into food additives developed from local resources, food rheology, polymers in agriculture should be the other focused research areas. Polymers in health and medicine should also be focused on for future polymer research in Thailand. Although the competitiveness of Thailand in these fields are not very strong but the problem of health and well-being of the Thai people have to be attended to and selected successes can be built upon if properly managed. Thailand cannot afford to rely totally on imported medical technology.