

## DEPARTMENT OF CHEMISTRY

Research in the Department is divided into the broad areas described below.

### Advanced Material and Biopolymer Research Unit

- Synthesis of polymer modified iron nanoparticles ([methar@nu.ac.th](mailto:methar@nu.ac.th))
- Modification of natural rubber with PLA, chitosan, siloxane to bioplastic materials ([chorwayakronp@nu.ac.th](mailto:chorwayakronp@nu.ac.th))
- Crystallisation of polymers such as polyethylene and polypropylene from sheared melts and the behaviour of additives such as nucleating agents during flow ([supatraw@nu.ac.th](mailto:supatraw@nu.ac.th))

### Biopolymer Group

please contact: ([saratm@nu.ac.th](mailto:saratm@nu.ac.th), [sukanyaj@nu.ac.th](mailto:sukanyaj@nu.ac.th), [juikhams@me.com](mailto:juikhams@me.com), [garethross@me.com](mailto:garethross@me.com), [supatraw@nu.ac.th](mailto:supatraw@nu.ac.th))

- Biomaterials for medical application
- Scaffolds made from natural products
- Synthesis of polymers and enhancement of polymer properties
- Hydrogel synthesis and characterization for biomedical applications
- Macromolecular entrapment and release of hydrophilic moieties
- Surfactant / polymer interactions
- Miscibility of polymer blends
- Bio-composite, Biodegradable film and foam
- Polymer processing Technology
- Rubber Technology and manufacture

### Processing and Extraction Medical Plant Research Unit

- Capsaicin and Capsiate Derivative Synthesis and Application for Food Supplementary and Nutraceutical ([uthaiw@nu.ac.th](mailto:uthaiw@nu.ac.th))
- Medium Chain Fatty Acid and Derivatives for Accelerated Metabolism ([uthaiw@nu.ac.th](mailto:uthaiw@nu.ac.th))
- Reduction condition system for  $\alpha,\beta$ -conjugated carbonyl compounds, modification of natural compounds ([chanitsarak@nu.ac.th](mailto:chanitsarak@nu.ac.th))
- Extraction and characterization of natural product ([sarins@nu.ac.th](mailto:sarins@nu.ac.th), [suratb@nu.ac.th](mailto:suratb@nu.ac.th), [anusonv@nu.ac.th](mailto:anusonv@nu.ac.th))
- Biosensor for DNA and gene detection ([chaturongs@nu.ac.th](mailto:chaturongs@nu.ac.th))
- Concentration and separation of biooil ([chaturongs@nu.ac.th](mailto:chaturongs@nu.ac.th))
- Isolation and identification of bioactive compounds from medicinal plants and insect fungi, investigation of anti-androgenic activity, anti-proliferation of LNCaP, antioxidant and lipolysis stimulating activity on 3T3 cell ([nungruthais@nu.ac.th](mailto:nungruthais@nu.ac.th))

## Banana Research Unit

- Activated charcoal from banana
- Natural fertilizer and animal feed (sumritm@nu.ac.th)

## Test kit development, Natural adsorbents, and Trace heavy metal analysis Unit

### Research Issues :

- 1) Trace heavy metal analysis and speciation by AAS (wipharatc@nu.ac.th, yuthapongu@nu.ac.th)
- 2) Test kits for pesticides, pollutants and contaminants in food and environmental samples (wipharatc@nu.ac.th)
- 3) Natural adsorbents for heavy metals and dyes ([ratanas@nu.ac.th](mailto:ratanas@nu.ac.th))

## Food and Environmental Sensor Research Unit

- Digital image colorimeter for nutrition and contaminants in food (pmasawat@nu.ac.th)
- Simple analytical test kits in food and environmental samples (wipharatc@nu.ac.th, anchaleesi@nu.ac.th)
- Nanoparticles as a colorimetric sensor in environmental samples (wanwisaj@nu.ac.th)
- Automatic reduced scale potentiometric titration device (yuthapongu@nu.ac.th)
- Colorimetric responses of polydiacetylene embedded on polyacrylic acid matrix for test kit development (nipaphatc@nu.ac.th)

## Supramolecular Chemistry Research Unit

- Modified montmorillonite clay for ion adsorptions (duangratth@nu.ac.th)
- Modified montmorillonite clay with chemical sensor (duangratth@nu.ac.th)
- Fabrication sensor from nanomaterials (wanwisaj@nu.ac.th)
- Fabrication ion selective electrodes from supermolecule (wanwisaj@nu.ac.th)
- Colorimetric sensors from organic dyes (anchaleesi@nu.ac.th)
- Design and optimization to obtain selective anion detection for  $\text{CN}^-$ ,  $\text{F}^-$ ,  $\text{NO}_2^-$ ,  $\text{CO}_3^{2-}$
- Cyanide screening test kits in both solution and solid supports (paper, zeolite and hydrogel bead)