

Electrochemical Sensing and Nanotechnology

School of Chemistry, Institute of Science, Suranaree University of Technology, Thailand



Dr. Kamonwad Ngamchuea

D.Phil. (Physical and Theoretical Chemistry), University of Oxford, UK

M.Chem. (Chemistry) First Class Honours, University of Oxford, UK

Email: kamonwad@sut.ac.th

Tel: 0-4422-4637

Research Interests

Chemical Sensors

- **Environment / Water**

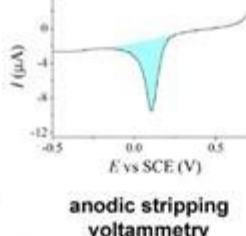
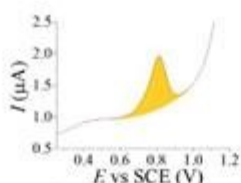
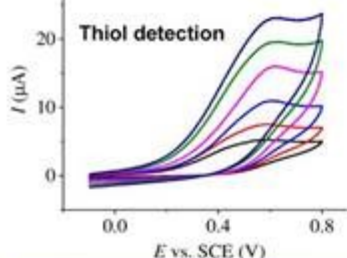
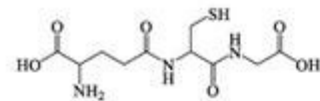
Heavy metals, nanoparticles, oxygen, nitrate

- **Food**

Tea, coffee, garlic, ginger, curcumin

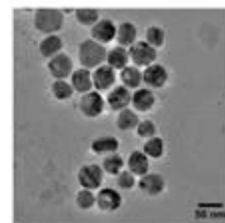
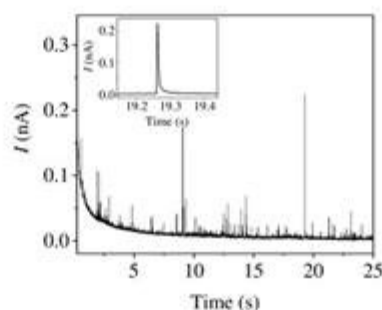
- **Health**

Uric acid, thiols, glutathione

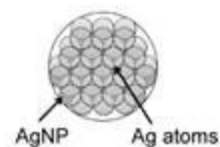


Nanomaterial Characterization

- **Single nanoparticle-electrode collisions (nano-impacts)**



- Size distribution
- Concentrations
- Reaction kinetics and mechanisms
- Catalytic activity
- Characterization of core-shell nanoparticles / nanocomposites
- Surface adsorption



core-shell nanoparticles



surface adsorption

Selected Publications

- **Ngamchuea K.** Chaisiwamongkhol K, Batchelor-McAuley C, Compton RG, *Analyst*, 2018, 81-99
- **Ngamchuea K.** Batchelor-McAuley C, Compton RG, *Anal. Chem.*, 2017, 3780-3786
- **Ngamchuea K.** Batchelor-McAuley C, Compton RG, *Anal. Chem.*, 2017, 2901-2908
- **Ngamchuea K.** Hurst P, Batchelor-McAuley C, Compton RG, *Sens. Actuator B Chem.*, 2016, 138-142
- **Ngamchuea K.** Clark R, Batchelor-McAuley C, Sokolov SV, Young NP, Compton RG, *Chem. Eur. J.*, 2017, 16085-16096
- **Ngamchuea K.** Tschulik K, Eloul S, Compton RG, *ChemPhysChem*, 2015, 2338-2347
- Tschulik K, **Ngamchuea K (co-first)**, Ziegler C, Beier MG, Damm C, Eychmueller A, Compton RG, *Adv. Funct. Mater.*, 2015, 5149-5158

Possible Projects for Students

- Detection of uric acid and other molecular biomarkers in blood / saliva / sweat
- Heavy metal detection e.g. arsenic, mercury, lead, etc.
- Development of sensors for the food industry e.g. sensors for detecting compounds in tea / coffee / energy drinks
- Development of nanomaterial characterization techniques
- Other projects identified by students themselves