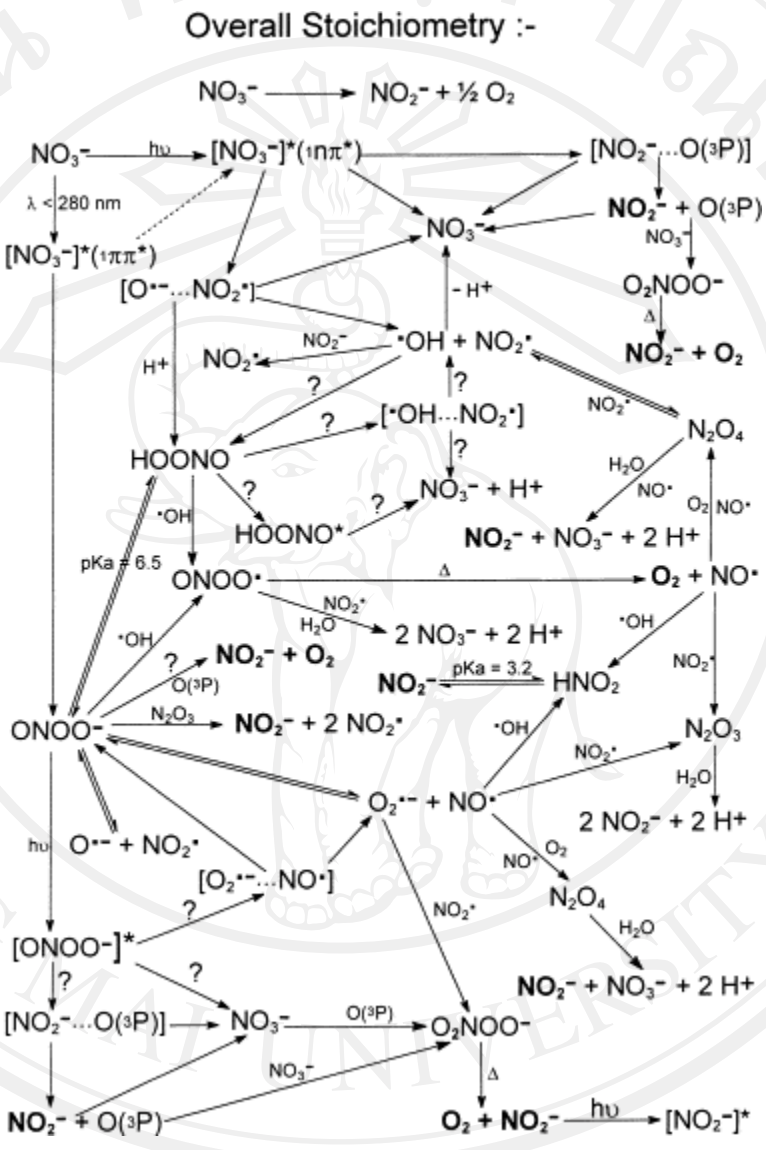
APPENDIX

1. General standard for food additive from Food and Drug Administration, Thailand (FDA, 2004)

Product	Food additive	Maximum value (mg kg^{-1})
Fermented pork	- Sodium nitrite - Potassium nitrite	125
	- Sodium nitrate - Potassium nitrite	500
Sausage	- Sodium nitrite - Potassium nitrite	125
	- Sodium nitrate - Potassium nitrite	500

2. The overall stoichiometry of nitrate photolysis (Mack and Bolton, 1999)



CURRICULUM VITAE

Name Miss Oranoot Ruankhum

Date of Birth September 23, 1984

Academic status

- High school, Chomthong School, Chiang Mai, 2004
- B.Sc. (Chemistry), Maejo University, Chiang Mai, 2008
- M.Sc. (Analytical Chemistry), Chiang Mai University, 2012

Awards/Scholarship

- Science Achievement Scholarship of Thailand, SAST
- Center for Innovation in Chemistry: Postgraduate Education and Research Program in Chemistry (PERCH-CIC)

Work Experiences

- Demonstrator in Chemistry laboratory for first year, Department of Chemistry, Faculty of Science, Chiang Mai University, 2009

List of publications

National conferences

1. O. Ruankhum, S. Satienperakul and S. Liawruangrath, **"Flow Injection with Chemiluminescence Detection for Determination of Nitrate and Nitrite"**, *The sixth PERCH Annual Scientific Congress, Chonburi*, 2009.

2. O. Ruankhum, S. Satienperakul and S. Liawruangrath, **"Determination of Nitrate and Nitrite in Food Samples by Flow Injection Chemiluminescence"**, *The 35th Congress on Science and Technology of Thailand (STT35), Chonburi*, 2009

3. O. Ruankhum, S. Liawruangrath and S. Satienperakul, **"Flow injection chemilumimescence system for determination of nitrate in food samples with the on-line photoreduction of nitrate ions to nitrite ions"**, *The PACCON, Ubonratchatani*, 2010.

4. O. Ruankhum, S. Satienperakul and S. Liawruangrath, **"On-line photoreduction for the determination of nitrate and nitrite in food samples by flow injection chemiluminescence"**, *The 1st CMU Graduate Research Conference, Chiang Mai*, 2010

THE RELEVANCE OF THE RESEARCH WORK TO THAILAND

Recently, there have been world-wide efforts to develop environmentally friendly analytical methods. An increasingly great demand for small and powerful analytical systems particularly concerns applications in field measurements of food analysis. In such analytical tasks usually take up a lot of time owing to a large number of samples to be analyzed. Therefore, analytical techniques with high sample throughput and minimum consumption of reagent/sample are required.

This research work focuses on developing greener analytical method for determination of nitrate and nitrite in food samples based on liminol-hydrogen peroxide chemiluminescene system. This method is considered as a greener analytical method and will be able to be utilized as an alternative method for determination of nitrate and nitrite with some benefits over standard method which use large amount of solvent and/or toxic reagent. This system consumes little amount of reagent with minimum waste generation and also reduces cost of analytical instrumentation and sample analysis. This would be able to help the Thai Government to improve the life quality of Thai citizen and also to prevent some environmental problems of Thailand, especially water and air pollution