Ann Lemley

Web Bio

Information

Biography

Biographical Statement

Ann T. Lemley is a Professor in the College of Human Ecology and is a member of the Department of Fiber Science & Apparel Design and of the Graduate Field of Environmental Toxicology. Her faculty appointment is a combination of Research and Outreach. Her research goal is to study the remediation of contaminants in the environment, particularly water and soil systems, in order to assess and decrease risks through removal or treatment. Projects have focused on pesticides, pharmaceuticals, and other organic contaminants. She and her group study advanced oxidation treatment methods, particularly Fenton and Fenton-like chemistry in homogeneous and heterogenous systems, including degradation kinetics, degradation products, and mechanisms. She is the author of over 65 papers in refereed journals and is on the Editorial Board of several journals. She is the former chair (2000) of the Agrochemical Division of the American Chemical Society, was named a Fellow of the Division in 2007, and is currently a member of its Executive Committee. Her Outreach Program is conducted through Cornell Cooperative Extension and other outlets and focuses on environmental issues such as drinking water protection and quality, home water treatment, household chemicals, and household hazardous waste. She was recognized by the USDA with an IMPACT 2000 award for her Rural Water Quality Education Program. She is the author of an extensive library of educational facts sheets and other materials, many of which can be found on her Water Quality Website, http://waterquality.cce.cornell.edu/.

Professional

Current Professional Activities

- Editorial Board Member, Bulletin of Environmental Contamination and Toxicology
- Editorial Board Member, Journal of Agricultural and Food Chemistry
- Editorial Board Member, Journal of Environmental Science and Health, Part A
- Member, Executive Committee of Agrochemical Division, American Chemical Society
- Active with NYSTAR Center for Environmental Quality centered at Syracuse University

Research

Current Research Activities

Degradation of contaminants in water and soil using chemical means is the current focal point of Dr. Lemley's research. Fast, convenient methods to degrade contaminants and decrease toxicity in groundwater, surface water, wastewater, or soils are being investigated. Current work investigates the use of advanced oxidation treatment methods (with emphasis on Fenton and Fenton-like treatment) to degrade low levels of pesticides, pharmaceuticals, and other chemical contaminants in water and soils. These systems have the capability of treating rinsewater from pesticide application equipment, contaminated groundwater, or other contaminated water supplies. The application of Fenton methods Includes using environmental sources of and various delivery methods for the Fenton reagents with a recent focus on nanoparticles as the source of iron. The studies include the investigation of degradation kinetics, degradation products, and mechanisms.

Extension

Current Extension Activities

We have developed a website for people with private water systems and those on public supplies who are concerned about the treatment of the water in their homes and the maintenance of wells and septic systems. There are numerous fact sheets and bulletins about water quality, connections to other relevant sites, and frequently asked questions. The site is http://waterquality.cce.cornell.edu

Education

Education

Ph.D. 1971 - Cornell University, Chemistry

M.S. 1970 - Cornell University, Chemistry

B.A. 1966 - St. John's University, Magna Cum Laude, Chemistry and Education

Courses

Websites

Related Websites

http://waterquality.cce.cornell.edu

Administration

Publications

Selected Publications

S-P Sun and A.T. Lemley. p-Nitrophenol degradation by a heterogeneous Fenton-like reaction on nano-magnetite: Process optimization, kinetics, and degradation pathways. J. Mol. Catal. A: Chem.349(1-2): 71– 79 (2011).

X. Zeng, K. Hanna, and A.T. Lemley. Cathodic Fenton degradation of 4,6-dinitro-ortho-cresol. J. Mol. Catal. A: Chem. 339:1–7 (2011).

X. Xiao, X. Zeng and A.T. Lemley. Species-dependent degradation of ciprofloxacin in a membrane anodic Fenton system. J.Ag.and Food Chem. 58 (18):10169–10175 (2010).

K. Neafsey, X. Zeng and A.T. Lemley. Degradation of sulfonamides in aqueous solution by membrane anodic Fenton treatment. J.Ag.and Food Chem. 58 (2):1068–1076 (2010).

X. Zeng and A.T. Lemley. Fenton Degradation of 4,6-dinitro-o-cresol with Fe2+ Substituted Ion Exchange Resin. J. Ag. and Food Chem. 57(9):3689–3694 (2009).

P. Ye and A.T. Lemley. Adsorption effect on the degradation of 4,6-o-dinitrocresol and p-nitrophenol in a montmorillonite clay slurry by AFT. J. Water Res 43:1303–1312 (2009).

P. Ye, L. Kong, and A.T. Lemley. Kinetics of carbaryl degradation by anodic Fenton treatment in a humic acid amended artificial soil slurry. Wat. Env. Res.81:29-39 (2009).

P. Ye and A.T. Lemley. Adsorption effect on the degradation of carbaryl, mecoprop and paraquat by Anodic Fenton Treatment in an Swy-2 montmorillonite clay slurry. J. Ag. and Food Chem. 56 (21):10200–10207 (2008).

H. Zhang and A.T. Lemley. Evaluation of the Performance of Flow-through Anodic Fenton Treatment in Amide Compounds Degradation. J. Ag. Food Chem. 55:4073-4079 (2007).

L. Kong and A.T. Lemley. Effect of nonionic surfactants on the oxidation of carbaryl by anodic Fenton treatment. J. Water Res. 41: 2794-2802 (2007).

S. Hong, H. Zhang, C.M. Duttweiler, and A.T. Lemley. Degradation of methyl tertiary butyl ether (MTBE) by anodic Fenton treatment. J. Haz. Mat. 144:29-40 (2007).

L. Kong and A.T. Lemley. Modeling evaluation of carbaryl degradation in a continuously stirred tank reactor by anodic Fenton treatment. J. Ag. Food Chem. 54:10061-10069 (2006).

H. Zhang and A.T. Lemley. Reaction mechanism and kinetic modeling of DEET degradation by flow-through anodic Fenton treatment (FAFT). Environ. Sci. & Tech. 40:4488-4494 (2006).

L. Kong and A.T. Lemley. Kinetic modeling of 2,4-D degradation in soil slurry by

anodic Fenton treatment. J. Ag. Food Chem. 54:3941-3950 (2006).

C.L. Friedman, A.T. Lemley, and A.Hay. Degradation of chloroacetanilide herbicides by anodic Fenton treatment. J. Ag. Food Chem. 54:2640-2651 (2006).

S.E. Bloom, A.T. Lemley, and D.E. Muscarella. Potentiation of apoptosis by heat stress plus pesticide exposure in stress resistant human B-lymphoma cells and its attenuation through interaction with follicular dendritic cells: role for c-jun N-terminal kinase signaling. Toxicol. Sci.89(1):214-223 (2006).

S. K. Obendorf, A.T. Lemley, A. Hedge, A.A. Kline, K. Tan, and T. Dokuchayeva. Distribution of pesticide residues within homes in central New York state. Arch. Environ. Contam. Toxicol. 50:31-44 (2006)

Q. Wang and A.T. Lemley. Reduced adsorption of ametryn in clay, humic acid, and soil by interaction with ferric ion under Fenton treatment conditions, J. Environ. Sci.Health Part B 41:223-236 (2006)

L. Wagenet, A. Lemley, D. Grantham, E. Harrison, K. DiTella, K. Mathers, and L.H. Younge. Evaluating the effectiveness of public television as a method for watershed education J.of Extens.(www.joe.org) 43(2): Article No. 2FEA5 (2005).

Q. Wang and A.T. Lemley. Kinetic effect of humic acid on alachlor degradation by anodic Fenton treatment. J.Environ. Quality, 33:2343-2352 (2004).

E. Scherer, Q, Wang, A. G. Hay, and A.T. Lemley. The binary treatment of aqueous metribuzin using anodic Fenton treatment and biodegradation. Arch. Environ. Contam. Toxicol., 47: 154-161 (2004).