

Publication list of Fien Degryse

Journal articles (peer reviewed)

- Ryan B M, Kirby JK, Degryse F, Scheiderich K, McLaughlin MJ (2014) Copper isotope fractionation during equilibration with natural and synthetic ligands. Accepted for publication in *Environmental Science & Technology*.
- Degryse F, McLaughlin MJ (2014) Phosphorus diffusion from fertilizer: visualization, chemical measurements, and modeling. *Soil Science Society of America Journal* 78: 832-842.
- Montalvo D, Degryse F, McLaughlin MJ (2014) Fluid fertilizers improve phosphorus diffusion but not lability in Andisols and Oxisols. *Soil Science Society of America Journal* 78: 214-224.
- McBeath TM, McLaughlin MJ, Kirby JK, Degryse F (2013). A stable-isotope methodology for measurement of soil-applied zinc-fertilizer recovery in durum wheat (*Triticum durum*). *Journal of Plant Nutrition and Soil Science* 176: 756-763.
- Ryan BM, Kirby JK, Degryse F, Harris H, McLaughlin MJ, Scheiderich K (2013) Copper speciation and isotopic fractionation in plants: uptake and translocation mechanisms. *New Phytologist* 199: 367-378.
- Smolders E, Versieren L, Shuofei D, Mattielli N, Weiss D, Petrov I, Degryse F (2013) Isotopic fractionation of Zn in tomato plants suggests the role of root exudates on Zn uptake. *Plant and soil* 370: 605-613.
- Degryse F, Ajiboye B, Armstrong RD, McLaughlin MJ (2013) Sequestration of phosphorus-binding cations by complexing compounds is not a viable mechanism to increase phosphorus efficiency. *Soil Science Society of America Journal* 77: 2050-2059.
- Santner J, Smolders E, Wenzel WW, Degryse F (2012) First observation of diffusion-limited plant root phosphorus uptake from nutrient solution. *Plant, cell & environment* 35: 1558-1566.
- Six L, Pypers P, Degryse F, Smolders E & Merckx R (2012) The performance of DGT versus conventional soil phosphorus tests in tropical soils - An isotope dilution study. *Plant and Soil* 359, 267-279
- Degryse F, Shahbazi A, Verheyen L, Smolders E (2012) Diffusion limitations in root uptake of cadmium and zinc, but not nickel, and resulting bias in the Michaelis constant. *Plant Physiology* 160: 1097-1109.
- Degryse F, Smolders E (2012) Cadmium and nickel uptake by tomato and spinach seedlings: plant or transport control? *Environmental Chemistry* 9: 48-54
- Hernandez-Soriano MC, Degryse F, Lombi E, Smolders E (2012) Manganese toxicity in barley is controlled by solution manganese and soil manganese speciation. *Soil Science Society of America Journal* 76: 399-407
- Verheyen L, Degryse F, Niewold T, Smolders E (2012) Labile complexes facilitate cadmium uptake by Caco-2 cells. *Science of the Total Environment* 426: 90-99
- Van Moorleghe C, Six L, Degryse F, Smolders E & Merckx R (2011) Effect of organic P Forms and P present in inorganic colloids on the determination of dissolved P in environmental samples by the Diffusive Gradient in Thin Films Technique, ion chromatography, and colorimetry. *Analytical Chemistry* 83, 5317-5323
- Baken S, Degryse F, Verheyen L, Merckx R & Smolders E (2011). Metal complexation properties of freshwater dissolved organic matter are explained by its aromaticity and by anthropogenic ligands. *Environmental Science & Technology* 45: 2584-2590

- Degryse F, Voegelin A, Jacquat O, Kretzschmar R & Smolders E (2011) Characterization of zinc in contaminated soils: complementary insights from isotopic exchange, batch extractions, and XAFS spectroscopy. *European Journal of Soil Science* 62: 318-330
- Hernandez-Soriano M, Degryse F & Smolders E (2011) Mechanisms of enhanced mobilisation of trace metals by anionic surfactants in soil. *Environmental Pollution* 159: 809-816
- Van Laer L, Degryse F, Leynen K & Smolders E (2010). Mobilization of Zn upon waterlogging riparian Spodosols is related to reductive dissolution of Fe minerals. *European Journal of Soil Science* 61: 1014-1024
- Amery F, Degryse F, Van Moorlegheem C, Duyck M & Smolders E (2010) The dissociation kinetics of Cu-dissolved organic matter complexes from soil and soil amendments. *Analytica Chimica Acta* 670: 24-32
- Van Damme, A, Degryse F, Smolders, E, Sarret, G, Dewit, J, Swennen, R & Manceau, A (2010) Zinc speciation in mining and smelter contaminated overbank sediments by EXAFS spectroscopy. *Geochimica et Cosmochimica Acta* 74: 3707-3720
- Degryse F, Smolders E, Zhang H & Davison W (2009) Predicting availability of mineral elements to plants with the DGT technique: a review of experimental data and interpretation by modelling. *Environmental Chemistry* 6: 198-218
- Degryse F, Smolders E & Parker DR (2009) Solid-liquid partitioning of trace metals in soils: concepts, methodologies, prediction and applications – a review. *European Journal of Soil Science* 60: 590-612
- Oporto C, Smolders E, Degryse F, Verheyen L & Vandecasteele C (2009) DGT-measured fluxes explain the chloride-enhanced cadmium uptake by plants at low but not at high Cd supply. *Plant and Soil* 318: 127-135
- Buekers J, Degryse F, Maes A & Smolders E (2008) Modelling the effects of ageing on Cd, Zn, Ni and Cu solubility in soils using an assemblage model. *European Journal of Soil Science* 59: 1160-1170
- Amery F, Degryse F, Cheyns K, De Troyer I, Mertens J, Merxck R & Smolders E. (2008) The UV-absorbance of dissolved organic matter explains the fivefold variation of its affinity for mobilizing Cu in an agricultural soil horizon. *European Journal of Soil Science* 59: 1087-1095
- Oorts K, Degryse F, Mertens J, Gascó G, Cornelis G & Smolders E (2008) Solubility and toxicity of antimony trioxide (Sb_2O_3) in soil. *Environmental Science & Technology* 42: 4378-4383
- Degryse F, Verma VK & Smolders E (2008) Mobilization of Cu and Zn by root exudates of dicotyledonous plants in resin-buffered solutions and in soil. *Plant and Soil* 306: 69-84
- Lofts S et al. (2007) (39 authors, publication on findings of expert group meeting about critical load approach) Critical loads of metals and other trace elements to terrestrial environments. *Environmental Science & Technology* 41: 6326-6331
- Amery F, Degryse F, Degeling W, Smolders E & Merxck R (2007) The copper mobilizing potential of dissolved organic matter in soils varies ten-fold depending on soil incubation and extraction procedures. *Environmental Science & Technology* 41: 2277-2281
- Mertens J, Degryse F, Springael D & Smolders E (2007) Zinc toxicity to nitrification in soil can be predicted from soil-less culture: validation of the Biotic Ligand Model for soil microorganisms. *Environmental Science & Technology* 41: 2992-2997

- Degryse F, Vlassak V, Smolders E & Merckx R (2007) Mobilization of cadmium upon acidification of agricultural soils: column study and field modeling. *European Journal of Soil Science* 58: 152-165
- Degryse F, Waegeneers N & Smolders E (2007) Labile lead in polluted soils measured by stable isotope dilution. *European Journal of Soil Science* 58: 1-7
- Degryse F, Smolders E & Parker DR (2006) An agar gel technique demonstrates diffusion limitations to Cd uptake by higher plants. *Environmental Chemistry* 3: 419-423
- Degryse F, Smolders E & Parker DR (2006) Metal complexes increase plant uptake of Zn and Cu: implications for uptake and deficiency studies in chelator-buffered solutions. *Plant and Soil* 289: 171-185
- Van Laer L, Smolders E, Degryse F, Janssen C & De Schamphelaere KAC (2006) Speciation of nickel in surface waters measured with the Donnan membrane technique. *Analytica Chimica Acta* 578: 195-202
- Degryse F, Smolders E & Merckx R (2006) Labile Cd complexes increase Cd availability to plants. *Environmental Science & Technology* 40: 830-836
- Bertling S, Degryse F, Odnevall Wallinder I, Smolders E & Leygraf C (2006) Model studies of corrosion induced copper runoff fate in soil. *Environmental Toxicology and Chemistry* 25: 683-691
- Degryse F & Smolders E (2006) Mobility of Cd and Zn in polluted and unpolluted Spodosols. *European Journal of Soil Science* 57: 122-133
- Degryse F, Smolders E & Cremers A (2004) Enhanced sorption and fixation of radiocaesium in soils amended with K-bentonites and submitted to wetting-drying cycles. *European Journal of Soil Science* 55: 513-522
- Maertens E, Thijs A, Smolders E, Degryse F Cong PT & Merckx R (2004) An anion resin membrane technique to overcome detection limits of isotopically exchangeable P in P-fixing soils. *European Journal of Soil Science* 55: 63-69
- Degryse F, Buekers J & Smolders E (2004) Radiolabile cadmium and zinc in soil as affected by pH and source of contamination. *European Journal of Soil Science* 55: 113-121
- Degryse F, Smolders E, Oliver I & Zhang H (2003) Relating soil solution Zn concentration to Diffusive Gradients in Thin Films measurements in contaminated soils. *Environmental Science & Technology* 37: 3958-3965
- Degryse F, Broos K, Smolders E & Merckx R (2003) Soil solution concentration of Cd and Zn can be predicted with a CaCl₂ soil extract. *European Journal of Soil Science* 54: 149-158
- Smolders E & Degryse F (2002) Fate and effect of zinc from tire debris in soil. *Environmental Science & Technology* 36: 3706-3710

Book Chapters

- Smolders E & Degryse F (2006) Fixation of cadmium and zinc in soils: implications for risk assessment. In: Natural attenuation of trace element availability in soils (Eds R Hamon, M McLaughlin, E Lombi) pp. 165-179. Taylor & Francis: CRC press.
- McLaughlin MJ, Smolders E, Degryse F & Rietra R (2011) Uptake of metals from soil into vegetables. In: Dealing with Contaminated Sites – from Theory to Practical Application (Ed. F. Swartjes) pp. 325-367. Springer Science+Business Media B.V.

Conference abstracts

(Oral presentations unless otherwise indicated; only abstracts as first or as presenting author given)

Degryse F, Vlassak V, Seuntjens P & Smolders E 2001. Cadmium mobility in sandy soils. *Sixth International Conference on the Biogeochemistry of Trace Metals*, Guelph, Canada.

Degryse F, Smolders E, Vandenhove H & Cremers A 2003. Enhanced sorption and fixation of radiocaesium in potassium bentonites submitted to wetting-drying cycles. *Seventh International Conference on the Biogeochemistry of Trace Metals*, Uppsala, Sweden.

Degryse F, Smolders E & Merckx R 2003. Prediction of solid–liquid distribution of cadmium and zinc based on labile metal content. *Seventh International Conference on the Biogeochemistry of Trace Metals*, Uppsala, Sweden.

Degryse F, De Brouwere K, Cornelis C & Smolders E 2003. Determination of K_d values for use in site-specific risk assessments. *Eighth International FZL/TNO Conference on Contaminated Soil*, Gent. (poster)

Degryse F, Smolders E & Merckx R 2004. Kinetic speciation of metal complexes in soil. *International workshop on Dissolved Organic Matter and the Cycling of carbon, nutrients and metals*, Bayreuth, Germany.

Degryse F & Smolders E 2005. Kinetic speciation of metal complexes in relation to metal mobility in soils. *Eighth International Conference on the Biogeochemistry of Trace Metals*, Adelaide, Australia.

Degryse F, Smolders E & Merckx R 2005. Labile cadmium complexes contribute to DGT measured fluxes and to plant uptake. *DGT workshop*, Lancaster, UK.

Degryse F & Smolders E 2006. Impact of the solid-liquid distribution coefficient of metals and metal products in soil on the critical load of metals. *SETAC meeting*, Den Haag, Nederland. (oral presentation by E Smolders)

Degryse F, Smolders E & Parker DR 2007. Zinc complexes increase uptake of Zn by plants: dependence of critical Zn^{2+} activity on ligand type. *Zinc Crops Congress*, Istanbul, Turkey.

Degryse F, Scheerlinck S & Smolders E 2007. Root exudates of tomato and spinach enhance uptake of Cu and Zn in resin buffered nutrient solutions. *Ninth International Conference on the Biogeochemistry of Trace Metals*, Peking, China.

Degryse F, Verheyen L & Smolders E 2009. Reported Michaelis constants (K_M) for Cd and Zn uptake by plants reflect diffusion limitations around roots, not the affinity of metal transporters. *Tenth International Conference on the Biogeochemistry of Trace Metals*, Chihuahua, Mexico.

Degryse F 2009. DGT measurements in soils: DGT as predictor of plant uptake? *DGT Conference 2009*, Sardinia, Italy (Invited keynote speaker)

Degryse F, Verheyen L & Smolders E 2010. DGT measurements in soils: An equilibrium model can be used to model the uptake of Ni by plants, but not that of Cd or Zn. *Twentieth Annual SETAC Europe Meeting*, Sevilla, Spain.

Hernandez-Soriano MC, Degryse F (presenting), Lombi E & Smolders E 2011. Manganese in soils: speciation and toxicity to plants. *Eleventh International Conference on the Biogeochemistry of Trace Metals*, Florence, Italy.

- Degryse F, Ajiboye B, Baird R & McLaughlin MJ 2012. (Lack of) effect of cation-complexing compounds on phosphorus fertilizer efficiency. Accepted for *ASA, CSSA, SSSA International Annual Meeting*. Cincinnati, OH, USA (21-24 Oct)
- Degryse F, Ajiboye B, Baird R & McLaughlin MJ 2012. A new technique to visualise diffusion of phosphorus and zinc from fertiliser. *SSA and NZSSS Soil conference*. Hobart, Australia
- Degryse F, Cuicui Z, Ajiboye B, Gupta V & McLaughlin MJ 2013. Transformations of sulfate in soil. *17th International Plant Nutrition Colloquium (IPNC)*. Istanbul, Turkey
- Degryse F, Ajiboye B, Baird R, Coqui da Silva R & McLaughlin MJ 2013. Transformations of sulfate and elemental sulfur in soil. *ASA, CSSA, SSSA International Annual Meeting*. Tampa, FL, USA
- Degryse F, Coqui da Silva R, Baird R & McLaughlin MJ 2014. Field measurement of sulfur uptake by crops from fertilizer sulfate or elemental sulfur, using a stable isotope technique. *ASA, CSSA, SSSA International Annual Meeting*. Long Beach, CA, USA
- Degryse F, Broadbent A, Tomczak B, Rivers C, Baird R, Coqui da Silva R & McLaughlin MJ 2014. Diffusion and plant availability of phosphorus from struvite-based fertiliser. *National Soil Science Conference*. Melbourne, Australia