# Online Proceedings

## POSTER SESSION 2

**Balcony, Easel 117**

*1:00 PM to 2:30 PM*

**Determining the Amount of Imidacloprd and a Soil Sample Using GC-MS**

*Aaron Lang, Sophomore, Chemical Engineering , Chemistry, Engineering , Bellevue College*
*Mentor: Grady Blacken, Chemistry, Bellevue College*
*Mentor: Sonya Remington-Doucette, Science Division, Bellevue College*

Each year bee specialists report detection of larger numbers of bee colonies suffering from colony collapse disorder. One of the suggested causes is the increasing use of neonicotinoid pesticides in farming agriculture. To study the effects these pesticides have on the environment, it is necessary to establish a method to quantify the amount of imidacloprid in an environmental sample. Previously, we found that off-line C-18 cartridges were suitable for enriching imidacloprid from complex matrices and for preparing samples for analysis in GC-MS (gas chromatography-mass spectrometry). Our previous work primarily focused on achieving a reliable calibration curve by enhancing signal-to-noise in the GC-MS. To further evaluate our findings, a spiked environmental sample was subjected to C-18 extraction and analyzed. This method resulted in a limit of detection as low as 160 micromolar, which is similar to the 120 to 320 micromolar range for limits of detection achieved by other research groups using more complex extractions. This is important to the future study of imidacloprid because it allows us to progress towards the analysis of environmentally relevant concentrations of imidacloprid in soil, plant and honey samples.

## POSTER SESSION 3

**Commons East, Easel 78**

*2:30 PM to 4:00 PM*

**Growth of Nickel Sulfate Hexahydrate Crystals in a Magnetic Field**

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*Zumrat Makhkamova, Senior, Chemical Engineering , Edmonds Community College*
*Erica Toikka, Sophomore, Bioengineering, Biology, Nursing, Edmonds Community College*
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*Mentor: Tom Fleming, Department of Physics, Edmonds Community College*

Nickel sulfate hexahydrate (NiSO4.6H2O) is an important industrial compound most commonly used in the nickel-plating industry. Approximately 40,000 tons are produced and consumed each year by manufacturers requiring corrosion-resistant components ranging from consumer electronics to medical devices and aerospace engineering. Freitas et. al. found that zinc sulfate heptahydrate crystal growth increased by 38% under a magnetic field of 0.3-0.7T compared to crystallization under earth's magnetic field alone, whereas Lundager et. al. have presented evidence that paramagnetic materials such as CuSO4.5H2O do not exhibit such magnetically-induced increases in crystal growth rate. We present here our progress on confirmatory experiments aimed at fitting Nyvlt theory of cumulative crystal weight fraction M(L) and average growth rate G in batch synthesis of diamagnetic ZnSO4.7H2O and paramagnetic NiSO4.6H2O under external, uniform, homogeneous magnetic fields $0.0T<B<1.0T$. Our study will examine the differences in the growth rate of paramagnetic and diamagnetic sulfate crystals under the influence of a manipulated magnetic field. Recrystallization is a method of purification during the synthesis process of many compounds. If recrystallization can be improved to increase percent yield by influencing the magnetic field surrounding the compound, it may be a profitable method for drug manufacturers to consider.