



PROFESSOR CHIEU TRAN

Marquette University Chemistry

***BIOCOMPATIBLE COMPOSITES FROM CELLULOSE, WOOL,
HAIR AND CHICKEN FEATHER: GREEN AND RECYCLABLE
SYNTHESIS AND APPLICATION FOR WATER PURIFICATION
AND WOUND HEALING***

Thursday

October 22, 2015

12:15 pm

Room 1315

Chemistry Bldg.

A novel, green and recyclable method has been developed for the synthesis of biocompatible composite materials containing polysaccharides such as cellulose (CEL) and chitosan (CS), and keratin (KER) from wound, hair and chicken feather. Various spectroscopy and imaging techniques including FT-IR, NIR, CP-MAS-NMR, XRD, SEM, TGA, DSC were used to monitor the synthetic process, to characterize the materials and to determine their chemical and mechanical properties. The composites were found to retain properties of their components, namely superior mechanical strength and excellent antibacterial and adsorption capability for pollutants and toxins. Furthermore, the composites also inhibit growth of Methicillin Resistant Staphylococcus Aureus (MRSA), Vancomycin Resistant Enterococcus (VRE), *S. aureus* and *E. coli*, stop bleeding and heal wounds. Novel applications of the composites including purification of drinking water and high performance bandage to treat ulcerous wounds of diabetics will be described.