Quantifying the reuse potential of "waste" media in a circular economy

The European Union produces 2.2 billion tonnes of waste annually, of which 10% (or 250 million tonnes) includes municipal waste, and 90% includes industrial, commercial, agricultural, and other business related waste. Of the 2.2 billion tonnes of waste produced, only 0.6 billion tonnes re-enter the system as recycled materials. The concept of the "circular economy" means that the reuse of "waste" materials from different sectors is encouraged. One sector where there may be opportunities to reuse waste materials is water and wastewater treatment. However, before this occurs, various environmental, logistical and financial issues need to be considered. These include the efficacy of a medium as an adsorbent, availability, cost, permeability (if used in filters), and any potential adverse environmental effects. This lecture will discuss these issues and will present a methodology to evaluate a potential medium as an adsorbent.

Mark Healy
Department of Civil Engineering
National University of Ireland, Galway, Republic of Ireland

Dr. Mark Healy is a Senior Lecturer [Associate Professor in the American System] in Civil Engineering at the National University of Ireland, Galway, and a Fellow of Engineers Ireland. He leads the Geo-Environmental Engineering Research Group, which currently comprises ten PhD students and one post-doctoral researcher. The group's research work is primarily in the area of experimental environmental engineering, and in particular, the investigation of the fate of phosphorus, nitrogen and other contaminants in soil-plant-water systems, and the effects of agricultural management on soil and water quality. Mark has published 108 peer-reviewed journal papers and has supervised to completion 17 PhD students.