

Abstract

Efficient pathogen detection in drinking and recreational water is vital for preventing disease outbreaks. Because waterborne pathogens are present in low concentrations, a fast and reliable concentration step is crucial for their detection. Crossflow filtration with hollow fiber membranes, an emerging technique for concentrating various waterborne pathogens including viruses, offers many advantages over traditional pathogen concentration methods but has significant limitations of its own. This presentation will briefly review performance characteristics, limitations, and parameters affecting the performance of established and emerging methods of virus concentration for detection. The importance of controlling virus-membrane interactions for higher and more reproducible virus recoveries will be highlighted. Nanotechnology-enabled approaches to controlling such interactions and virus concentration methods based on such approaches will be discussed.