The Special Issue covers topics related to applications of forward osmosis energy in desalination and wastewater treatment, draw solution engineering, membrane fabrication, forward osmosis applications in food and agriculture, regeneration processes, energy efficiency and fouling mechanisms. Full-length papers, review papers and simulation studies that cover the most recent advancements in forward osmosis technology are strongly invited to submit to the Special Issue. Academics are encouraged to share their ideas and expertise in the field of osmotically-driven membrane technology beyond the conventional applications such as dairy processing, pharmaceutical and drug delivery, and produced wastewater treatment.