**Claims**

1. A peritoneal dialysis filter device, which comprises:

a housing comprising a first port and a second port; and

a hollow fibre membrane formed from hollow hydrophilic fibres within the housing, where each of the fibres have an inner surface and an outer surface, wherein

the inner surface of the hollow hydrophilic fibres are aligned co-axially with respect to the alignment of the first port and the outer surface of the hollow fibres is aligned perpendicularly with respect to the alignment of the second port, such that, when used:

a dialysate from a subject enters the filter device through the first port and exits *via* the second port in an outflow direction; and

a regenerated dialysate from a sorbent system enters the filter device through the second port and exits *via* the first port in an inflow direction,

wherein the device further comprises a post-filtration system, which comprises:

a first fluid pathway;

a second fluid pathway, which comprises a post-filtration sorbent compartment; and

a switch for selecting between the first and second fluid pathways, where the first and second fluid pathways are both fluidly connected to the first port of the housing *via* the switch, where the sorbent compartment comprises a post-filtration sorbent that is suitable for removing one or more of water-soluble uremic toxins, protein-bound uremic toxins, low-molecular weight proteins, endotoxins, exotoxins, inflammatory mediators and microorganisms.

2. A peritoneal dialysis system, comprising,

a filter device;

a sorbent device, wherein

the filter device is arranged to receive and filter the entirety of dialysate from a subject and to provide the filtered dialysate to a sorbent device when operated in an outflow direction; and

the filter device is arranged to receive at least part of a regenerated dialysate from the sorbent device, where the filter device comprises:

a housing comprising a first port and a second port; and

a hollow fibre membrane formed from hollow hydrophilic fibres within the housing, where each of the fibres have an inner surface and an outer surface, where

the inner surface of the hollow hydrophilic fibres are aligned co-axially with respect to the first port and the outer surface of the hollow fibres is aligned perpendicularly with respect to the second port, such that, when used:

a dialysate from a subject enters the filter device through the first port and exits *via* the second port in an outflow direction; and

a regenerated dialysate from the sorbent device enters the filter device through the second port and exits *via* the first port in an inflow direction,

wherein the filter device further comprises a post-filtration system, which comprises:

a first fluid pathway;

a second fluid pathway, which comprises a post-filtration compartment; and

a switch for selecting between the first and second fluid pathways, where the first and second fluid pathways are both fluidly connected to the first port of the housing *via* the switch, where the sorbent compartment comprises a post-filtration sorbent that is suitable for removing one or more of water-soluble uremic toxins, protein-bound uremic toxins, low-molecular weight proteins, endotoxins, exotoxins, inflammatory mediators and microorganisms.

3. The peritoneal dialysis system according to Claim 2, wherein the system further comprises a bypass means or apparatus, which comprises:

a bypass fluid pathway connected to the sorbent device and arranged to return a regenerated dialysate to the subject without passing through the filter device; and

a switching means or apparatus that selects between sending a regenerated dialysate to the filter device or to the bypass fluid pathway.