

MICROWAVE REGENERATION OF FOULED FILTRATION MEMBRANES

Iftikhar Ahmad, UltraRadiant, 7016 Bellard Court, Raleigh, NC 27617

ABSTRACT

The function of the various filtration media is to separate the critical submicron and macromolecular constituents from fluids. Obviously, these membranes perform the desired operation successfully and can result in membrane fouling. Certain fouling materials can be removed by hydraulic means such as filter backwash or scrubbing, whereas most others can only be removed by chemical cleaning methods recommended by membrane manufacturers. Some of the filtration media are disposable and are thus discarded after use.

Although chemical cleaning could be an effective approach, an important aspect is the chemical compatibility of membrane media and other filter components to cleaning chemicals. A membrane made of high chemical tolerance would allow greater freedom in selecting cleaning solutions, however, these membrane media will be more expensive and the cleaning process will lead to more chemicals into the waste stream making it unfriendly to the environment. The higher pressure backwash method can possibly damage the delicate filtration membranes.

A green approach requiring little or no harsh chemicals will be presented that utilizes microwaves to penetrate the filtration membrane and provide deep yet gentle cleaning of the filtration membrane. The approach is essentially physical in nature and requires no pressure and can be applied to the finest nano-filtration membranes as well as for thicker filters. This method has also been successfully used to clean disposable filters and thus provides the means to recycle numerous filters that otherwise may have to be discarded.

BIOGRAPHY, SHORT SKETCH

Name:	Iftikhar Ahmad
Company:	UltraRadiant
Address:	7016 Bellard Court
City, State, Postal	Raleigh, NC 27617
Country:	USA
Phone:	919-413-5930
Email:	ia.ultraradiant@gmail.com

Bio:

Iftikhar Ahmad, Ph.D., has been using microwaves for numerous applications since his graduate school days for over a couple of decades. These include processing of ceramics, composites, regeneration of diesel particulate trap filters, curing of polymers in the semiconductors, activation and annealing of semiconductor wafers. Finally, he has applied microwave technology to fabrics and regeneration of filtration membranes.