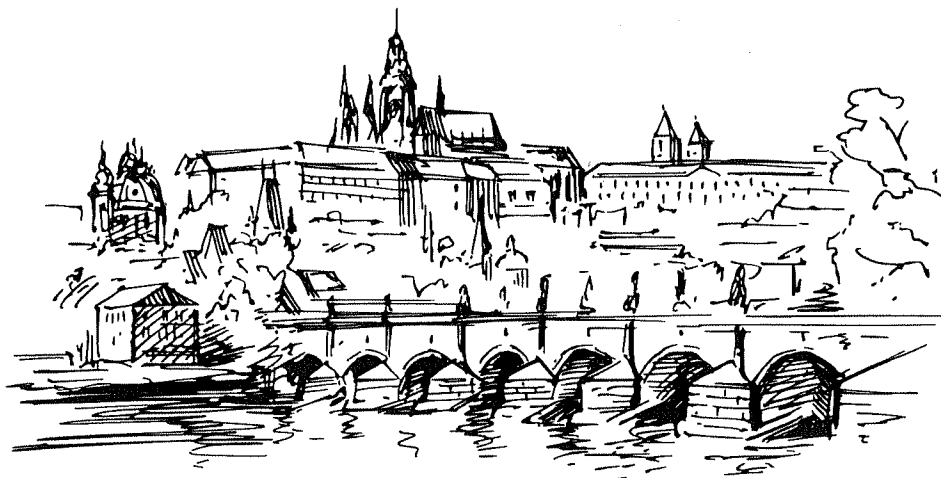




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## Book of Abstracts



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## TiO<sub>2</sub> COATED POLYACRYLONITRILE MEMBRANE'S APPLICATION TO TREAT OILY WASTEWATER

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**Abstract:** Most of the traditional water treatment methods are not effective enough to treat stabile oil in water emulsions with micro sized or smaller oil droplets. Membrane filtration offers a solution to this problem, especially ultrafiltration with high efficiency and low energy cost [1,2]. The drawback of membrane filtration is membrane fouling. By modifying the membrane's surface with TiO<sub>2</sub> nanoparticles its flux can be increased and the fouling can be decreased [3].

In the present work polyacrylonitrile (PAN) ultrafiltration membranes were coated with different amounts of TiO<sub>2</sub>. Oil in water emulsion was filtered through the coated membranes. The fouled membrane's surface was rinsed with water and then UV irradiated. To observe the changes which occur after using and cleaning the coated membrane for a longer period, all measurements were repeated three times in each case and ten times in case of the membrane which showed the best result in regard to the flux recovery. Relative flux values, flux recovery, and retention of the coated membranes were compared to each other and to the neat membrane. The TiO<sub>2</sub> coating on the membrane's surface significantly reduced the fouling and increased about the flux value and the flux recovery of the coated membrane compared to the neat membrane.

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