Application of Mach-Zehnder interferometer based on long period grating structure for salinity measurement in water environment

Gustavo R. C. Possetti\textsuperscript{a}, Ricardo C. Kamikawachi\textsuperscript{a}, Celso L. Prevedello\textsuperscript{b},
Marcia Muller\textsuperscript{a}, José L. Fabris\textsuperscript{a}

\textsuperscript{a}Universidade Tecnológica Federal do Paraná, Av. Sete de Setembro 3165, Curitiba, PR, Brazil 80230-901;
\textsuperscript{b}Universidade Federal do Paraná, Rua dos Funcionários 1540, Curitiba, PR, Brazil 80035-050

ABSTRACT

In this work we studied the behavior of an in fiber Mach-Zehnder interferometer for salinity measurements. The salt species used are KCl, NaCl and NaCOOH (organic salt) within the concentration range from 3 g.L\textsuperscript{-1} to 150 g.L\textsuperscript{-1}. The results are compared with traditional salinity measurement methods (conductivity and refractive index) and show that the device can distinguish and identify the concentration of each species saline.

Keywords: Salinity, cascade long period grating, environmental measurement, water quality