



Diffusion rate of hydrogen peroxide through water-swelled polyurethane membranes

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Supporting Information

List of Chemicals

Acetanilide; Sigma-Aldrich; cas number 103-84-4; lot number MKBS9643V

Hydrogen Peroxide 30% solution; Sigma-Aldrich; cas number 111-30-8; lot number STBG6542

Potassium Permanganate; VWR-Chemicals; cas number 7722-64-7; lot number 17K084118

Sulfuric Acid 95.0-97.0%; Sigma-Aldrich; cas number 7664-93-9; lot number SZBD3080V

Concentration profiles

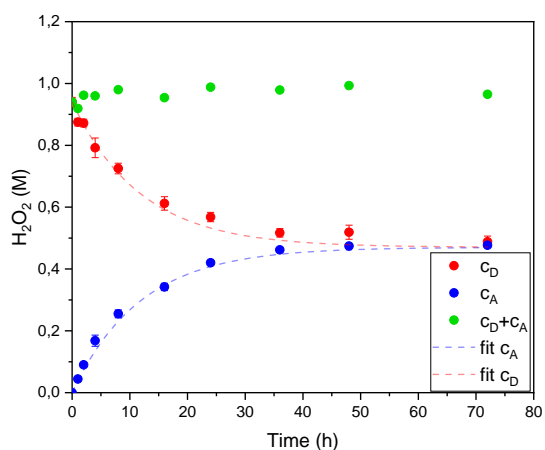


Figure 1. HydroMed D1; $l = 2.088618 \cdot 10^{-3}$ cm; $c_0 = 0.94$; $A_0 = 0.1256$ cm²; $\beta_{\max} = 0.0314$; $D_e = 1.56 \cdot 10^{-6} \pm 0.07 \cdot 10^{-6}$; $R^2 = 0.9861$

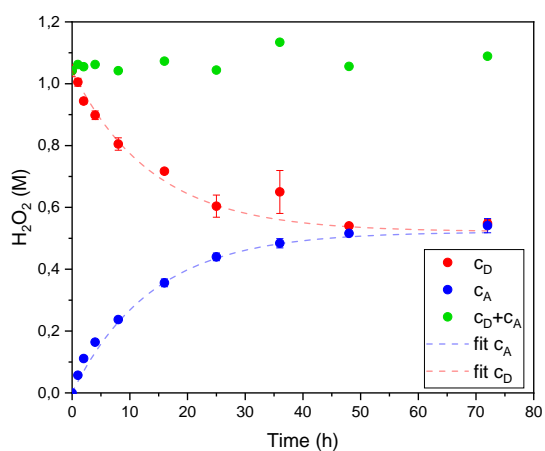


Figure 2. HydroMed D3; $l = 1.452 \cdot 10^{-3}$ cm; $c_0 = 1.042$; $A_0 = 0.1256$ cm²; $\beta_{\max} = 0.0314$; $D_e = 9.27 \cdot 10^{-7} \pm 0.53 \cdot 10^{-7}$; $R^2 = 0.9788$

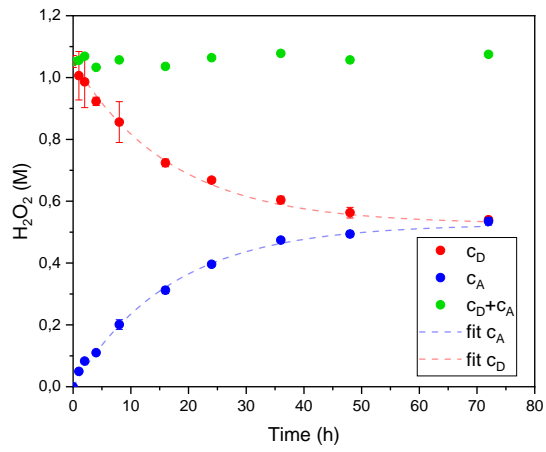


Figure 3. HydroMed D4; $l = 1.423778 \cdot 10^{-3} \text{ cm}$; $c_0 = 1.052$; $A_0 = 0.1256 \text{ cm}^2$; $\beta_{\max} = 0.0314$; $D_e = 7.44 \cdot 10^{-7} \pm 0.17 \cdot 10^{-7}$; $R^2 = 0.9962$

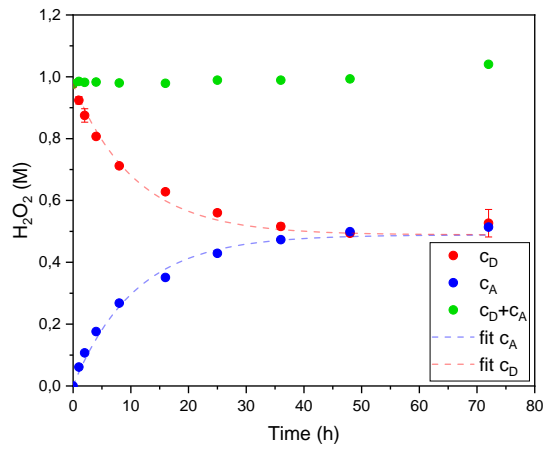


Figure 4. HydroMed D6 1.11.2016; $l = 2.742 \cdot 10^{-3} \text{ cm}$; $c_0 = 0.977$; $A_0 = 0.1256 \text{ cm}^2$; $\beta_{\max} = 0.0314$; $D_e = 2.25 \cdot 10^{-6} \pm 0.10 \cdot 10^{-6}$; $R^2 = 0.9886$

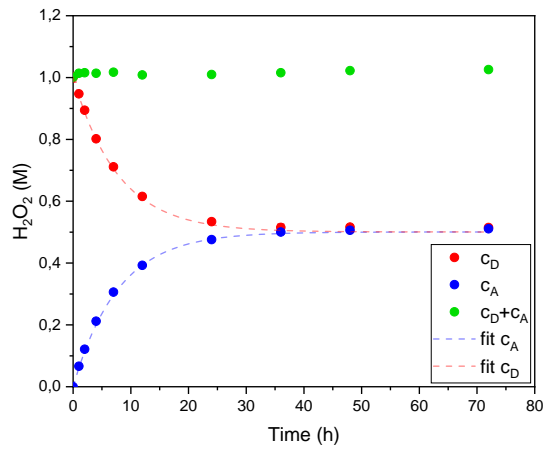


Figure 5. HydroMed D6 04.07.2017; $l = 1.4386 \cdot 10^{-3}$ cm; $c_0 = 1.0008$; $A_0 = 0.1256$ cm²; $\beta_{\max} = 0.0314$; $D_e = 1.63 \cdot 10^{-6} \pm 0.03 \cdot 10^{-6}$; $R^2 = 0.9981$

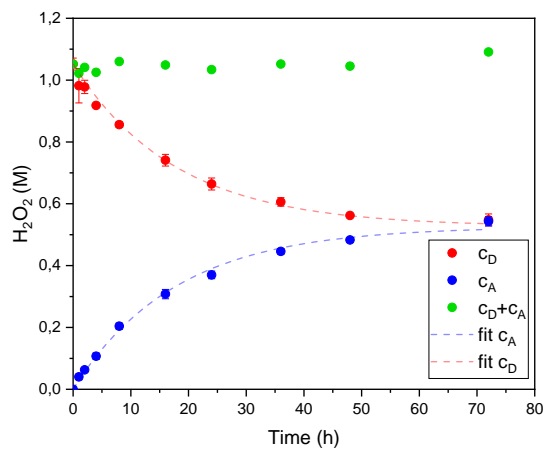


Figure 6. HydroMed D7 02.11.2016; $l = 1.668 \cdot 10^{-3}$ cm; $c_0 = 1.052$; $A_0 = 0.1256$ cm²; $\beta_{\max} = 0.0314$; $D_e = 8.31 \cdot 10^{-7} \pm 0.25 \cdot 10^{-7}$; $R^2 = 0.9931$

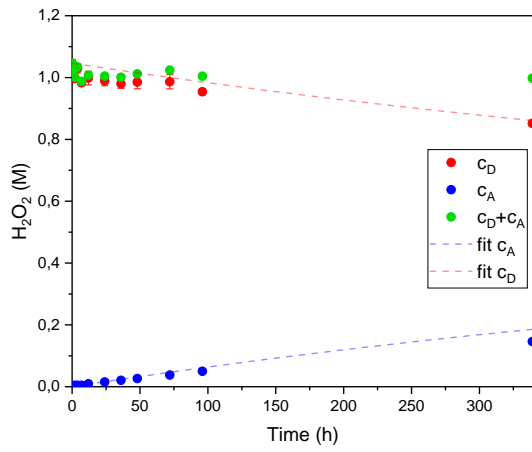


Figure 7. HydroThane H5; $l = 0.869 \cdot 10^{-3}$ cm; $c_0 = 1.0466$; $A_0 = 0.1256$ cm²; $\beta_{max} = 0.0314$; $D_e = 9.93 \cdot 10^{-9} \pm 1.09 \cdot 10^{-9}$; $R^2 = 0.6906$

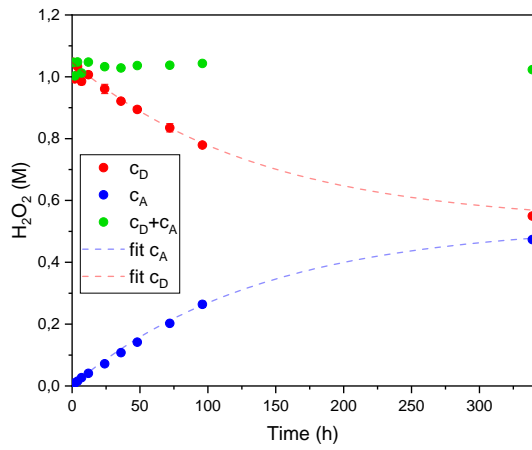


Figure 8. HydroThane H15; $l = 1.471 \cdot 10^{-3}$ cm; $c_0 = 1.0466$; $A_0 = 0.1256$ cm²; $\beta_{max} = 0.0314$; $D_e = 9.37 \cdot 10^{-8} \pm 0.28 \cdot 10^{-8}$; $R^2 = 0.9902$

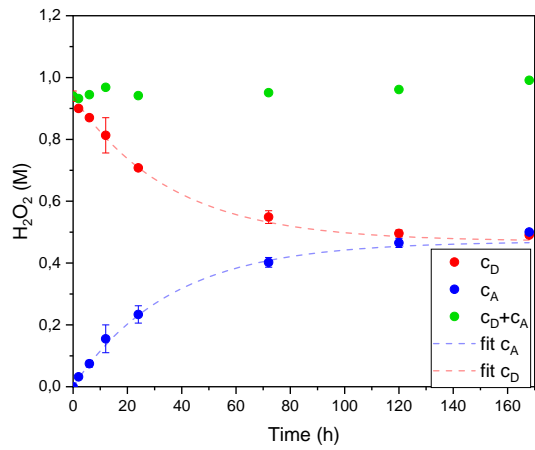


Figure 9. Hydrothane H25; $l = 3.100 \cdot 10^{-3}$ cm; $c_0 = 0.9398$; $A_0 = 0.1256$ cm²; $\beta_{\max} = 0.0314$; $D_e = 7.72 \cdot 10^{-7} \pm 0.30 \cdot 10^{-7}$; $R^2 = 0.9947$

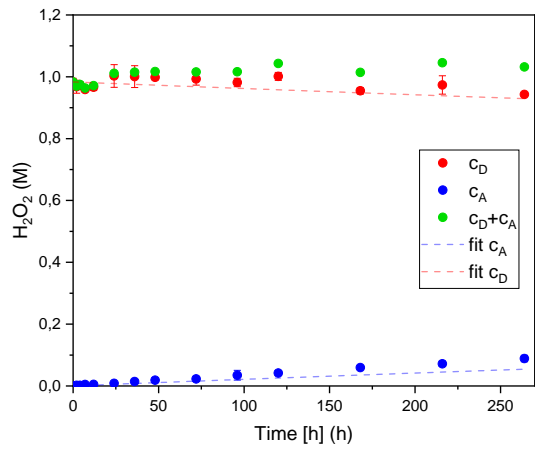


Figure 10. Hydrothane H5 (mix study) ; $l = 1.313 \cdot 10^{-3}$ cm; $c_0 = 0.9832$; $A_0 = 0.1256$ cm²; $\beta_{\max} = 0.0314$; $D_e = 5.12 \cdot 10^{-9} \pm 0.85 \cdot 10^{-9}$; $R^2 = 0.6984$

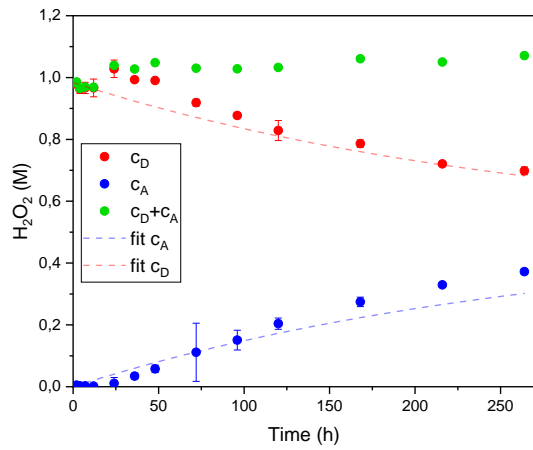


Figure 11. HydroThane H5:H25 8:2; $l = 0.428 \cdot 10^{-3} \text{ cm}$; $c_0 = 0.9832$; $A_0 = 0.1256 \text{ cm}^2$; $\beta_{\max} = 0.0314$; $D_e = 1.36 \cdot 10^{-8} \pm 0.10 \cdot 10^{-8}$; $R^2 = 0.8977$

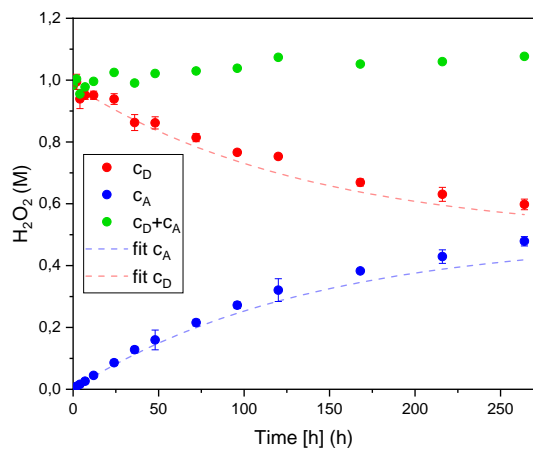


Figure 12. HydroThane H5:H25 6:4; $l = 0.6305 \cdot 10^{-3} \text{ cm}$; $c_0 = 0.9832$; $A_0 = 0.1256 \text{ cm}^2$; $\beta_{\max} = 0.0314$; $D_e = 4.02 \cdot 10^{-8} \pm 0.18 \cdot 10^{-8}$; $R^2 = 0.9660$

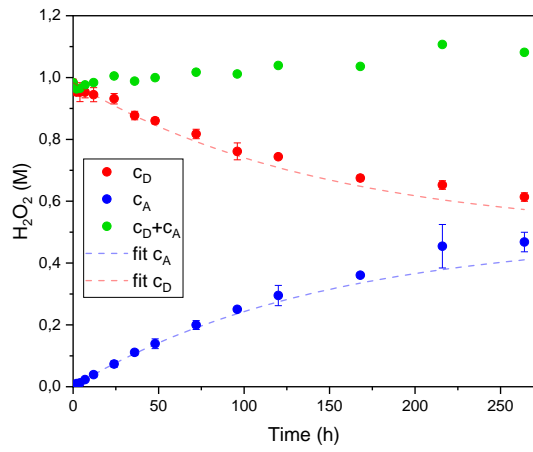


Figure 13. HydroThane H5:H25 4:6; $l = 2.455 \cdot 10^{-3} \text{ cm}$; $c_0 = 0.9832$; $A_0 = 0.1256 \text{ cm}^2$; $\beta_{\text{max}} = 0.0314$; $D_e = 1.48 \cdot 10^{-7} \pm 0.06 \cdot 10^{-7}$; $R^2 = 0.9673$

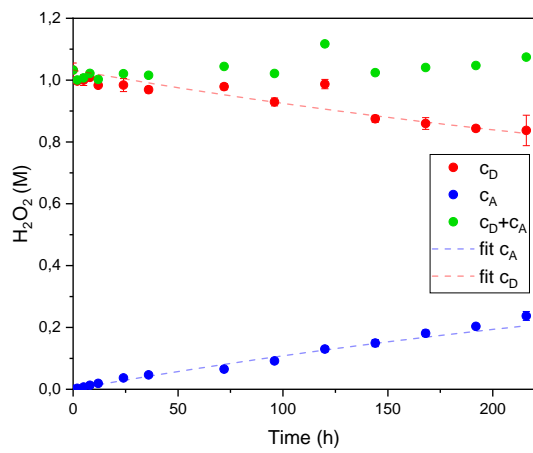


Figure 14. HydroThane H5:H25 2:8; $l = 9.750 \cdot 10^{-3} \text{ cm}$; $c_0 = 1.0326$; $A_0 = 0.1256 \text{ cm}^2$; $\beta_{\text{max}} = 0.0314$; $D_e = 2.03 \cdot 10^{-7} \pm 0.10 \cdot 10^{-7}$; $R^2 = 0.9058$

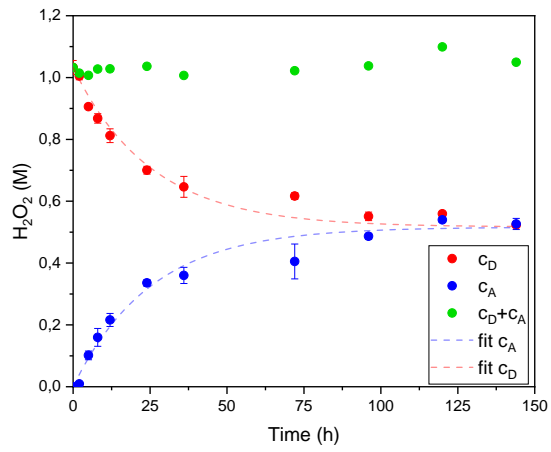


Figure 15. HydroThane H25 (mix study); $l = 1.800 \cdot 10^{-3}$ cm; $c_0 = 1.0326$; $A_0 = 0.1256$ cm²; $\beta_{max} = 0.0314$; $D_e = 6.28 \cdot 10^{-7} \pm 0.40 \cdot 10^{-7}$; $R^2 = 0.9719$

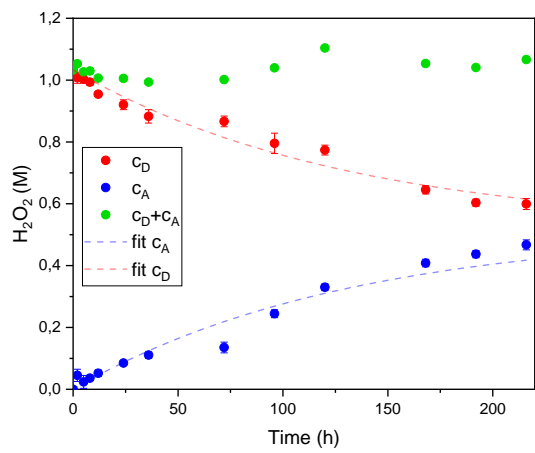


Figure 16. Nafion 117; $l = 22.2125 \cdot 10^{-3}$ cm; $c_0 = 1.0326$; $A_0 = 0.1256$ cm²; $\beta_{max} = 0.0314$; $D_e = 1.50 \cdot 10^{-6} \pm 0.07 \cdot 10^{-6}$; $R^2 = 0.9606$

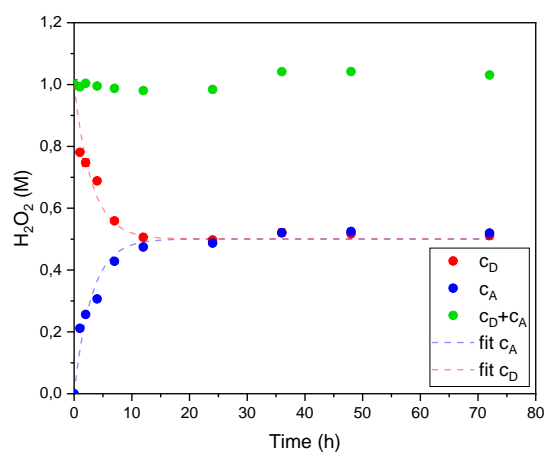


Figure 17. PMMA; $l = 0.200 \cdot 10^{-3}$ cm; $c_0 = 1.0008$; $A_0 = 0.1256$ cm²; $\beta_{\max} = 0.0314$; $D_e = 5.76 \cdot 10^{-7} \pm 0.46 \cdot 10^{-7}$; $R^2 = 0.9595$