

Abstract Submitted  
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**PIV measurements of hydrodynamic interactions between biofilms and flow** KENNETH T. CHRISTENSEN, FARZAN KAZEMIFAR, MARCELO AYBAR, PATRICIA PEREZ-CALLEJA, ROBERT NERENBERG, University of Notre Dame, SUMIT SINHA, RICHARD J. HARDY, Durham University, JIM L. BEST, University of Illinois, GREG H. SAMBROOK SMITH, University of Birmingham — Biofilms constitute an important form of bacterial life in aquatic environments and are present at the interface of fluids and solid such as riverbeds or bridge columns. They are also utilized in bioreactors for bioremediation and water treatment purposes. They are permeable, heterogeneous, and deformable structures that can influence the flow and mass/momentum transport, yet their interaction with flow is not fully understood in part due to technical obstacles impeding quantitative experimental investigations. We have attempted to address these challenges using the PIV technique and fluorescence imaging to investigate the flow field around cylinders covered with biofilms at different growth stages. These measurements are meant to uncover the coupled dynamics of turbulence and the biofilm development. Preliminary results of PIV measurements of flow-biofilm interactions in channel flow will be presented.

Farzan Kazemifar  
University of Notre Dame

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