Bio-Polymers for Improving Liquid Flow in Pipelines—A Review and Future Work Opportunities

Hayder A. Abdulbari\textsuperscript{a}, Ainoon Shabirin\textsuperscript{b}, H.N. Abdurrahman\textsuperscript{c}

\textsuperscript{a} Center of Excellence for Advanced Research in Fluid Flow, Universiti Malaysia Pahang, Gambang 26300, Kuantan, Pahang, Malaysia
\textsuperscript{b} Faculty of Chemical and Natural Resources Engineering, Universiti Malaysia Pahang, Gambang 26300, Kuantan, Pahang, Malaysia
\textsuperscript{c} Faculty of Chemical and Natural Resources Engineering, Universiti Malaysia Pahang, Gambang 26300, Kuantan, Pahang, Malaysia

\textbf{ABSTRACT}

Several decades following Tom's discoveries on polymeric drag reducing agents (DRA) continue to see research efforts to produce robust and shear-stable DRA. Most efforts revolve around established artificial polymers, but questions have been raised recently about their environmental impact and safety. As such, a large number of researchers are looking into natural materials especially bio-polymers as substitutes. Several bio-polymers are found to exhibit drag reducing capabilities in aqueous media. All these factors suggest that bio-polymers would make a suitable alternative to artificial DRAs. This paper aims to present several works to-date on bio-polymer DRAs, and expose new possibilities.

\textbf{KEYWORDS:} Drag reduction; Pipelines; Turbulence; Polymers

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