**The Utilization Potency of Biopolymer as an Eco-Friendly Scale Inhibitors**

**Ully Zakyatul Husna**

1Asset Optimization, Pertamina Patra Drilling Contractor/Petroleum Engineer, Pekanbaru, Riau, Indonesia.

**Abstract:**

Scale formation is one of the major issues in the petroleum industry. The development of these scale layers could result in production losses and equipment instability because of pipeline blockage, energy leakage, corrosion acceleration and severe accidents which will impact the safety of the production process. The utilization of chemical scale inhibitors (Sis) is considered an economical and successful route for the scale prevention. Two main components of the chemical SIs are phosphonate and polymer. Many of the phosphorous compounds are toxic and very expensive. Besides, portions of the phosphonate compounds are thermally less stable than polymeric scale inhibitors in a harsh environment of high temperature and high pressure (HTHP). This is considered as an issue as a good scale inhibitor should be able to be applied under wide range of temperature and pressure. Therefore, the continuous development in petroleum production imposes the need to develop a novel phosphorus-free scale inhibitor. Meanwhile, polymers have been broadly applied as a scale inhibitor in oil and gas fields because of their enhanced thermal stability and improved environmental compatibility. Polymeric scale inhibitors also show better dispersing efficiency. Today, the biopolymers have pulled in a tremendous consideration from the industry to replace the utilization of synthetic polymer due to their interesting qualities such as their lightness, strong mechanical properties, and appealing functionality. Biopolymers are insensitive toward brine salinity yet are vulnerable to biological degradation. Specifically, these polymers present enormous potential for environmental application because of their biodegradability, chemical adaptability and reactivity, biocompatibility, and nontoxicity. Recently, several new eco-friendly scale inhibitors have been reported in the literature. Hence, this paper provides a review of the utilization of biopolymer as scale inhibitor in the application of oil and gas industry under laboratory approach or field trial application. The types of scales, chemical scale inhibitors (SIs) and biopolymers are likewise reviewed here. The presented work in this paper is expected to enhance the fundamental understanding of scale formation, as well as contribute to the development process of biopolymer scale inhibitors.

**Biography of presenting author** (should not exceed 100 words)

(Example: Ully Zakyatul Husna, M.Sc studied Petroleum Engineering at the Universitas Islam Riau, Indonesia and graduated in 2018. She then received her Master degree in Petroleum Engineering in 2021 at the Universiti Teknologi PETRONAS, Malaysia. She is now a Petroleum Engineer focusing in Asset Optimization in the Pertamina Patra Drilling Contractor, Indonesia.

**Details of presenting author to be mentioned in the certificate:**

Name: Ully Zakyatul Husna, M.Sc

Affiliation: Petroleum Engineer, Pertamina Patra Drilling Contractor

Country: Indonesia

**Other Details:**

Presentation Category: (Oral Presentation)

Session Name: -

Email: ullyzulkarnaini@gmai.com

Alternative email:

Contact Number: +62 823 8434 6260

Twitter/Facebook/LinkedIn:

Recent Photograph: (High Resolution)

