on sample solution with 5 % and 1 % IL. The 3 % solution presented the lowest wear.

The AFM data revealed the formation of a stable film in 3 % IL and 1 % ZDDP solution. The film in 1% and 5 % IL with 1 % ZDDP was observed to be torn under the aggressive wear due to unstable film formation and corrosive nature of the IL at 5 % concentration. The smoother film formed at 3 % concentration confirms that the optimum additive concentration is 3 %.

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