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DEVELOPMENT OF ALKYL-GLUCOSIDE-BASED DETERGENT FOR MOTOR OIL STAINS REMOVAL

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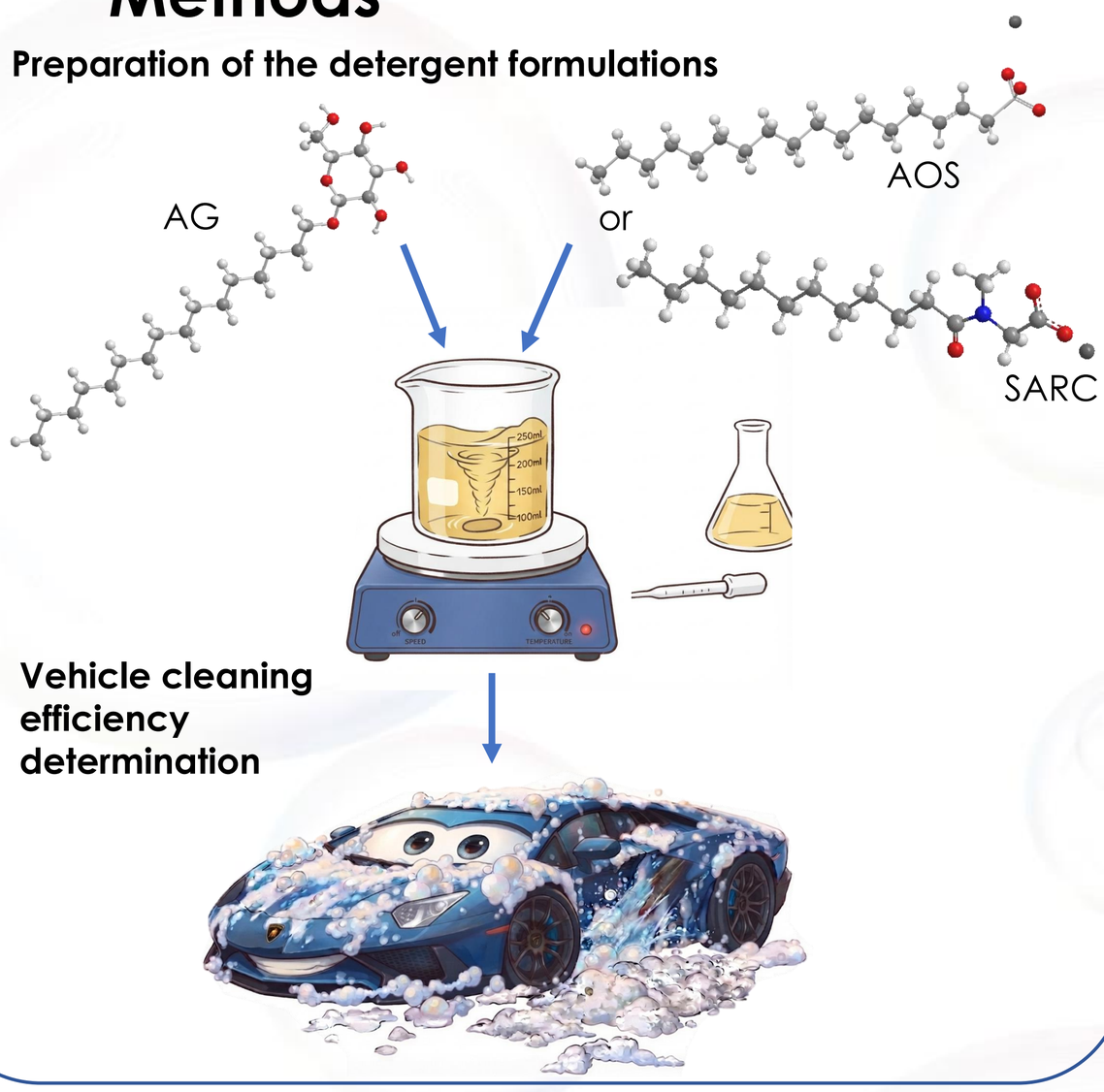
MODULAZ RESEARCH
Smart Green WashPro

Goals

- Determining the influence of alfa olefin sulfonate (AOS) and sodium lauroyl sarcosinate (SARC) contents on detergent efficiency for professional vehicle washing
- Fresh and used motor oil removal.
- Further characterization of the most efficient detergent formulation.

Methods

Preparation of the detergent formulations



Vehicle cleaning efficiency determination

Conclusion

- X2 and X3 formulations showed the highest efficiency in cleaning fresh and used motor oil, respectively.
- Formulations with AOS and AG showed to be more efficient in comparison with formulations containing SARC and AG.
- The optimal mixed micelle molecular packing of AOS and AG maximizes the solubilization capacity for motor oil.

Results

Cleaning efficiency

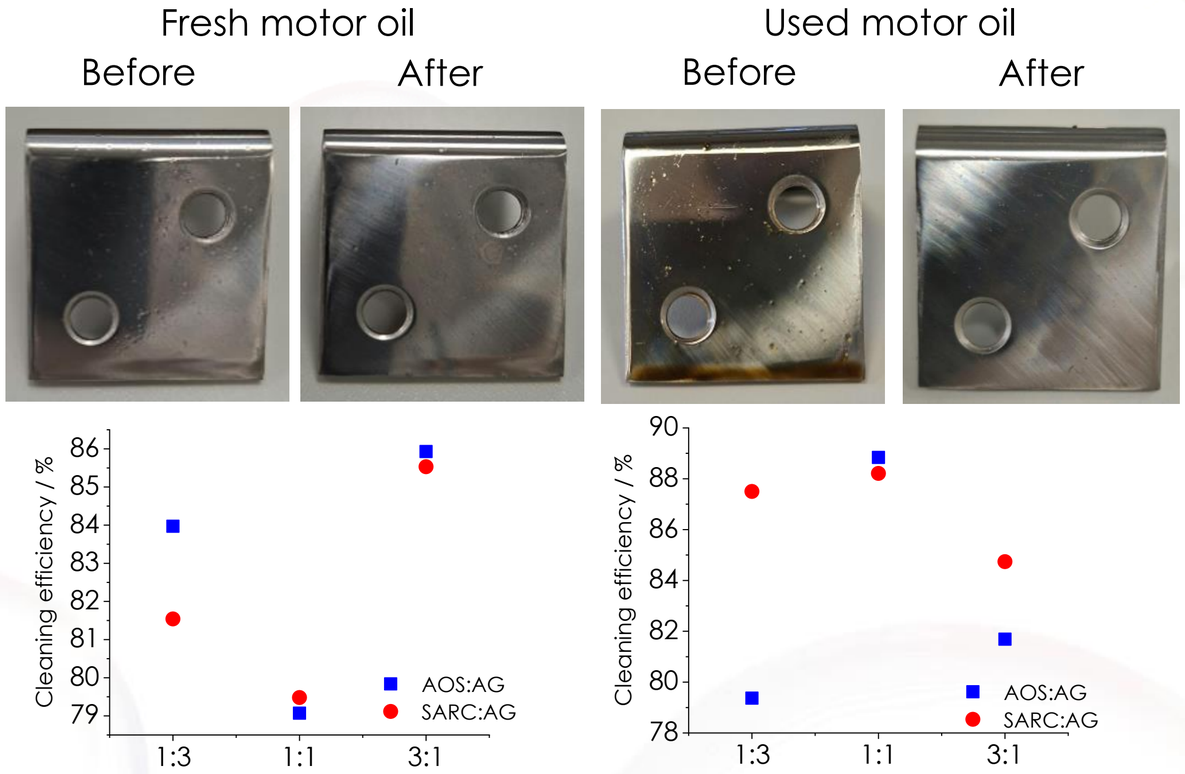


Figure 1. Fresh motor oil (left) and used motor oil (right) cleaning efficiencies of the prepared formulations.

Formulations' properties

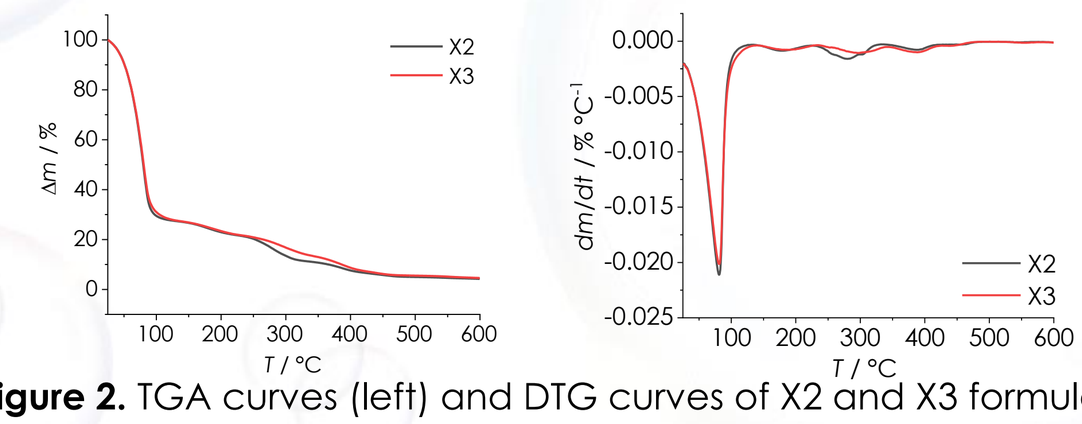


Figure 2. TGA curves (left) and DTG curves of X2 and X3 formulations.

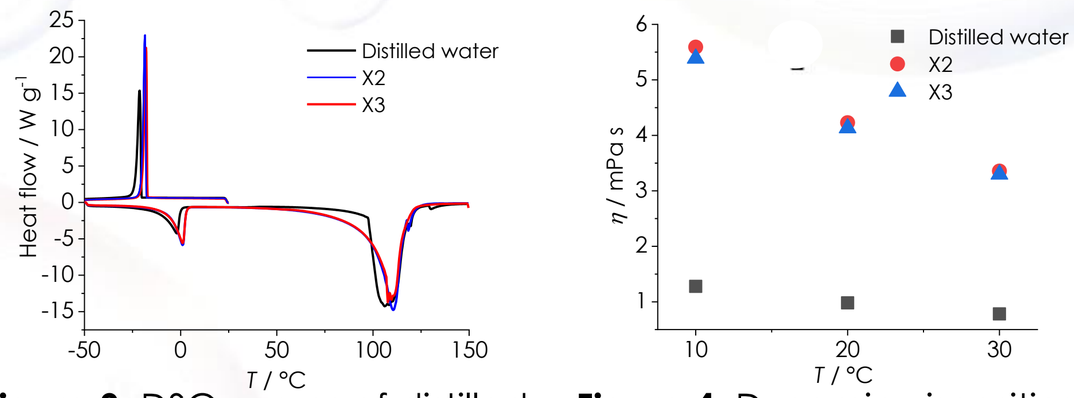


Figure 3. DSC curves of distilled water, X2 and X3 formulations.

Figure 4. Dynamic viscosities of distilled water, X2 and X3 formulations (Stabinger method).

Table 1. pH and ionic conductivity values of X2 and X3 detergent formulations.

Sample	pH	κ / mS cm^{-1}
X2	11.80	13.92
X3	11.34	35.3

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