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A thermometric study on the kinetics of the acid dissolution of aluminium in the presence of *Napoleonaea imperialis* seeds extract and iodide ions

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Abstract. The dissolution of aluminum alloy AA 1060 in 0.5 M and 1.0 M HCl was investigated using thermometric measurements. The reaction number of the aluminum coupons varied linearly with the concentration of the acid. Addition of *Napoleonaea imperialis* seed extract to the dissolving aluminium coupons lowered the reaction number in both concentrations of HCl by inhibiting the dissolution process. The inhibition efficiency of *Napoleonaea imperialis* seed extract was enhanced to a considerable extent in the presence of iodide ions with the synergistic parameter $S > 1$. The adsorption of *Napoleonaea imperialis* extract on the aluminium surface best aligned with the Langmuir adsorption isotherm model. The values of the free energy, ΔG_{ads}, for the adsorption process revealed the process to be spontaneous and physisorptive.

***Keywords*:** aluminium, temperature, reaction number, *Napoleonaea imperialis*, inhibition efficiency, adsorption isotherm.

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