

# Geochemical Characteristics of Triassic-Jurassic Boundary in Tabas Basin, Central Iran

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A thick sedimentary succession of Upper Triassic-Lower Jurassic age, with a thickness of about 1600 m, provided a good case to study how the geochemical properties changes through the Triassic-Jurassic boundary in the Tabas Basin. The studied section (Kamarmacheh Kuh section) is composed of marine Nayband Formation (Upper Triassic) overlain by siliclastic sediments of Shemshak Formation (Lower/Middle Jurassic). Detailed geochemical analyses were conducted on selected samples from both formations to see how geochemical properties change through the Triassic-Jurassic boundary. Unlike sharp boundaries encountered elsewhere, results reveal no significant variations in biomarker ratios across this boundary. High Pr/Ph ratios (1.07-1.25) and very low Gammacerane/Hopane ratios (0.03-0.04) together with the absence of 28, 30-bisnorhopanes, all indicate oxic to disoxic depositional conditions for both formations. The n-alkane distribution maximizing at C<sub>15</sub>-C<sub>17</sub> range, very low values of TAR (0.08-0.12) as well as very low Oleanane/Hopane ratios (0.05-0.6) are typical of marine organic matter. Moreover, abundant C<sub>27</sub> regular steranes compared to C<sub>28</sub> and C<sub>29</sub> homologues indicate the predominance of marine organic matter for both Shemshak and Nayband Formations. Maturity sensitive biomarker parameters, such as C<sub>29</sub>ααα 20S/(20S+20R) sterane ratio (0.41-0.48) and C<sub>29</sub>αββ/(ααα+αββ) sterane ratio (0.52-0.54), show values near to equilibrium, representing a thermal maturity at the beginning of oil window. In addition, all the ratios used for determining thermal maturity remarkably decrease from base to top of the studied section. Detailed molecular analyses, together with the data from Rock-Eval pyrolysis, indicate almost very small changes in depositional conditions (oxicity, organic matter type and sedimentary environment) across the Triassic-Jurassic boundary.

**Key words:** *Tabas basin, Shemshak & Nayband formations, biomarkers, Triassic-Jurassic boundary*