



IRAN CATALYST

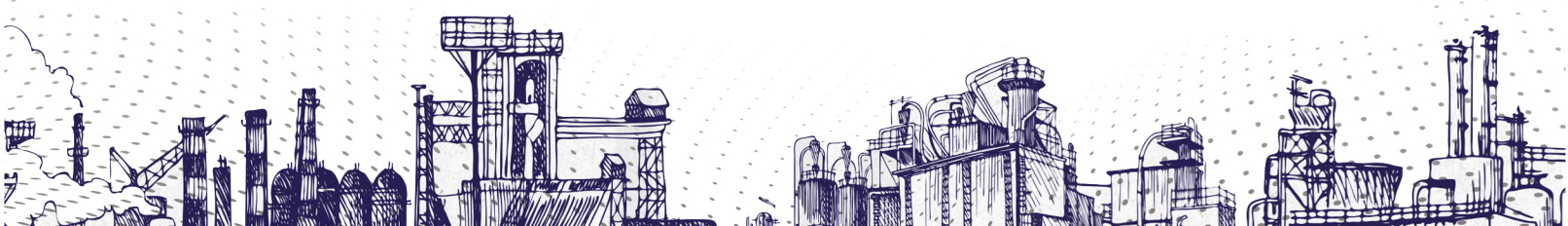
Pioneering Catalyst Technologies in Iran



+ PIONEERING CATALYST TECHNOLOGIES IN IRAN +

- + Reference Laboratory and Catalyst Industry Research Center +
- + Technical and Engineering Services for Catalyst Technology Development +
- + Performance Monitoring of Reformers and Catalytic Reactors +
 - + AI-Driven Optimization of Catalytic Processes +
 - + Catalyst Training and Skill-Building Workshops +

irancatalyst.ir





ABOUT US

Iran Catalyst is a technology-focused company founded in 2023 and based at the Technology and Innovation Hub of Sharif University of Technology.

Our work centers on catalyst technology, process engineering, and AI-based monitoring and optimization for the steel, petrochemical, and refining sectors.

We run a reference laboratory and research center dedicated to catalytic systems. Our team develops catalyst know-how, provides technical and engineering services for industrial plants, monitors the performance of reformers and catalytic reactors, and designs AI-driven tools that help improve process stability and efficiency. We also offer training workshops to build practical skills for engineers and operators.

With support from leading academic experts and a strong network of industry specialists,

We bridge scientific insight with real industrial needs and deliver solutions that are reliable and ready for use.





IRAN CATALYST SERVICES



Reference Laboratory of Iran's Catalyst Industry

Catalyst characterization and advanced testing

Comprehensive analytical and interpretive reports



Training & Skill Development

Specialized workshops on heterogeneous catalysts

Hands-on training for steel, petrochemical, and refining industries



Performance Monitoring & Evaluation

Reformers, reactors, and catalytic processes

Data-driven, AI-enhanced predictive monitoring



Catalyst R&D & Know-How Development

Indigenous catalyst technologies for syngas and ethylene

Pilot-scale semi-industrial setups



Inspection & Supervision

Catalyst loading in reformers and reactors

Quality assessment and technical documentation review



+ Characterization of Nanoparticles for Catalytic Applications

In line with advancing technical knowledge and catalytic technologies for the petrochemical, refining, and steel industries, and supporting the sustainable development of catalyst-consuming sectors, Iran Catalyst serves as Iran's reference center for the catalyst industry. In collaboration with the Department of Chemical and Petroleum Engineering at Sharif University of Technology, we offer a wide range of laboratory and research services to catalyst-consuming industries. These services are performed in our reference laboratories according to established testing standards and delivered by Iran Catalyst's experts, accompanied by detailed interpretive and analytical reports.

Structural and morphology tests

- + **(SEM) Scanning Electron Microscopy**
Examination of particle shape, surface features
- + **(SCM) Surface & Chemical Mapping**
Surface analysis and chemical mapping
- + **(TEM) Transmission Electron Microscopy**
Visualization of the distribution of active nanoparticles
- + **(XPS) X-ray Photoelectron Spectroscopy**
Surface analysis for determining metal oxidation states
- + **(FTIR) Fourier Transform Infrared**
Identification of functional groups and surface bonding
- + **Raman Spectroscopy**
Characterization of carbonaceous structures (coking) and crystalline phases

Physical texture and surface tests



- + **BET (Brunauer–Emmett–Teller)**
(Specific surface area, spectroscopy)
- + **BJH (Barrett–Joyner–Halenda)**
Pore size distribution
- + **Hg porosimetry**
Macroporosity measurement
- + **Density measurements (bulk & tapped)**
Determination of mechanical properties



Performance and Reactor Tests

- + **Micro-reactor tests**
Small-scale activity testing •
- + **Cycle stability tests**
Stability evaluation over time •
- + **Deactivation studies**
Assessing the impact of coke, poisons, sintering on activity



Monitoring tests for spent catalysts

- + **Spent catalyst analysis**
Surface area loss, coking level, and phase changes of metal components
- + **Leaching tests**
Migration or dissolution of active metal
- + **Reusability tests**
Recyclability or regenerability assessment

Chemical Composition and State Tests

- + **(ICP-OES / ICP-MS) Inductively Coupled Plasma**
Quantitative metal content determination •
- + **(XRF) X-ray Fluorescence**
Semi-quantitative elemental composition analysis •
- + **(TPR) Temperature Programmed Reduction**
Reducibility assessment of metal components •
- + **(TPD) Temperature Programmed Desorption**
Surface acidity/basicity measurement •
- + **(TPO) Temperature Programmed Oxidation**
Coke content measurement on spent catalysts •
- + **(Chemisorption) H_2 , CO , NH_3**
Determination of active metal surface or acidic/basic sites

Mechanical and Strength Tests

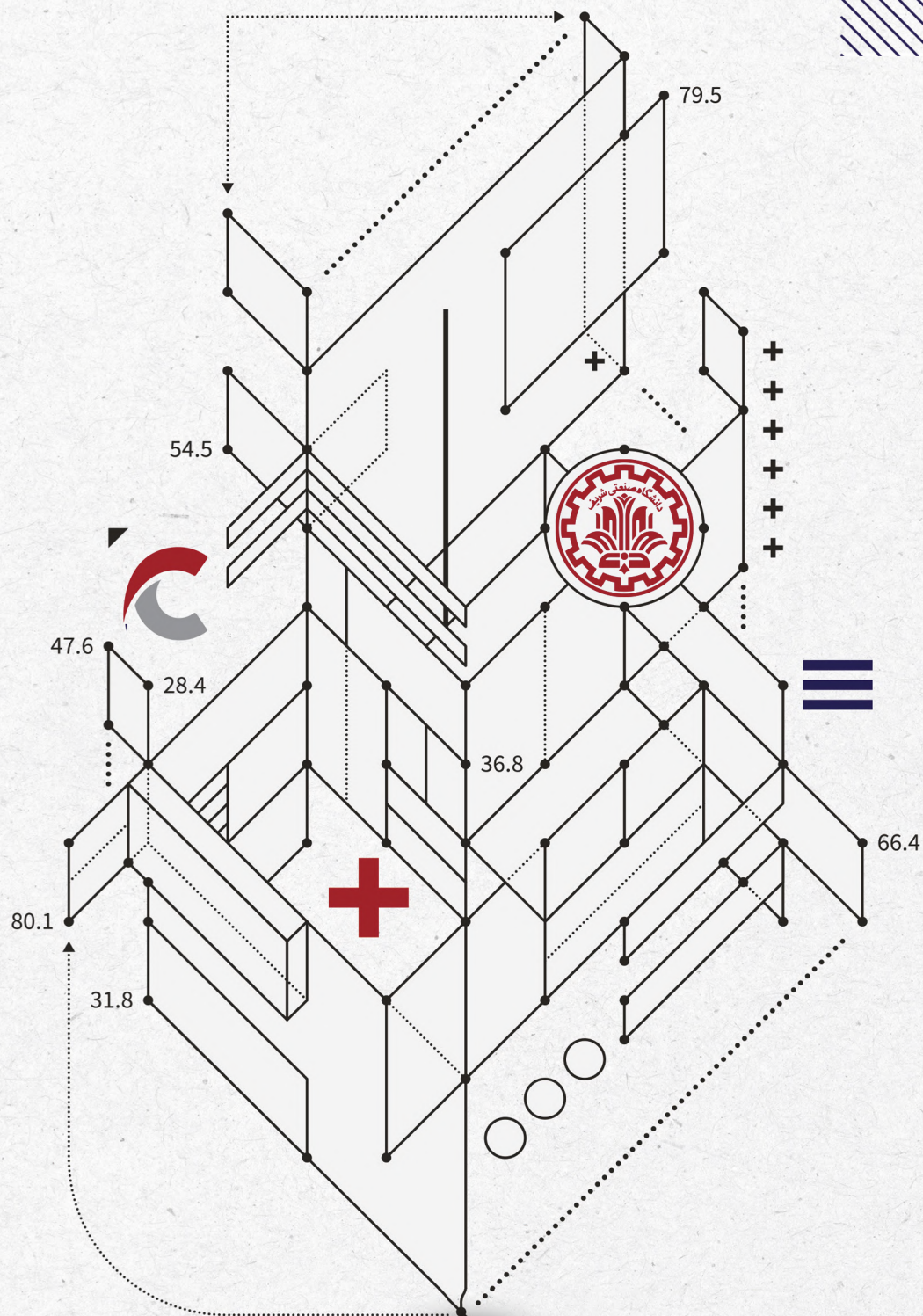
- + **Crush strength / Attrition resistance**
Mechanical strength of pelletized or extruded catalysts
- + **Abrasion index**
Abrasion resistance measurement

Iran Catalyst

The reference provider of laboratory-based nanoparticle characterization reports for catalytic applications, along with clear interpretive and analytical results.

CHARACTERIZATION





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