

A Deterministic CO₂-to-CO Conversion Platform for Reliable and Auditable Carbon Utilization



Inorganic Chemistry Laboratory
Department of Advanced Materials Chemistry,
Korea University (Sejong Campus)

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Technology Transfer Brief

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01 CO₂ Reduction Is a Reliability & Verification Problem



① EU CBAM Enforcement

- Mandatory Reporting:** Requirement of emission data for market entry.
- Trade Barrier:** Risk of export blockages due to data verification failure.



② ISSB/SEC Disclosures

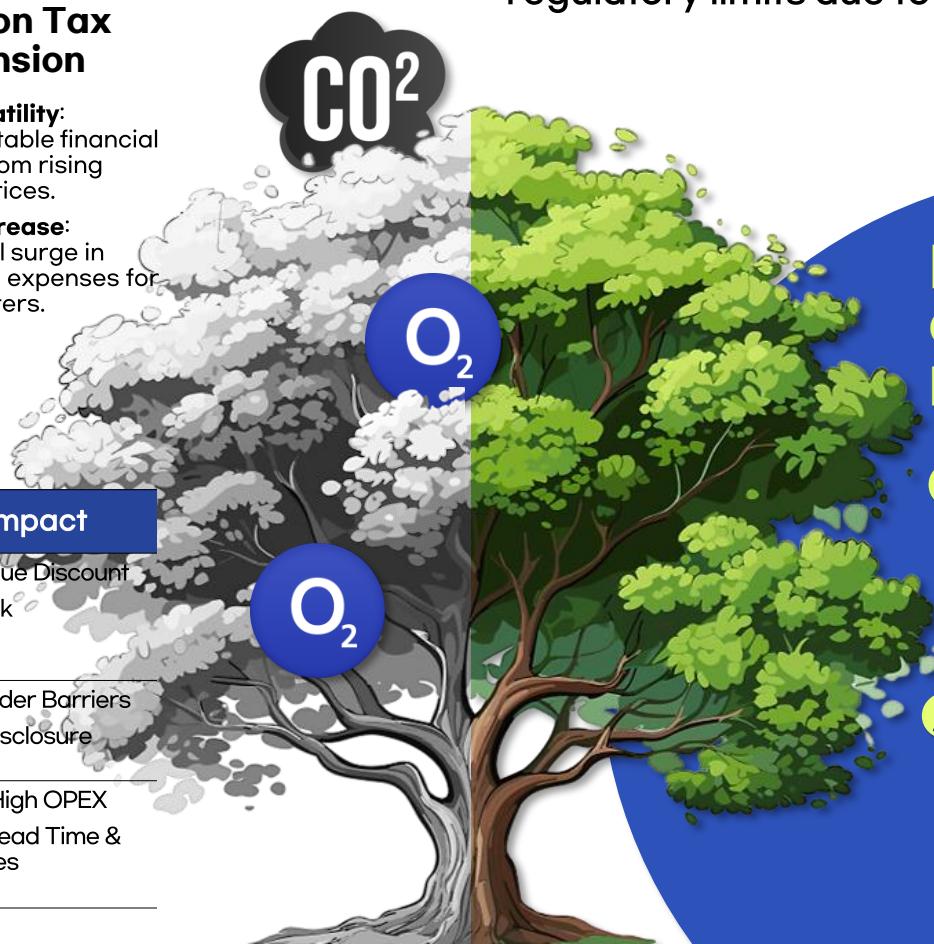
- Valuation Impact:** Carbon footprint as a critical corporate value metric.
- Investment Risk:** Potential divestment driven by opaque reduction data.



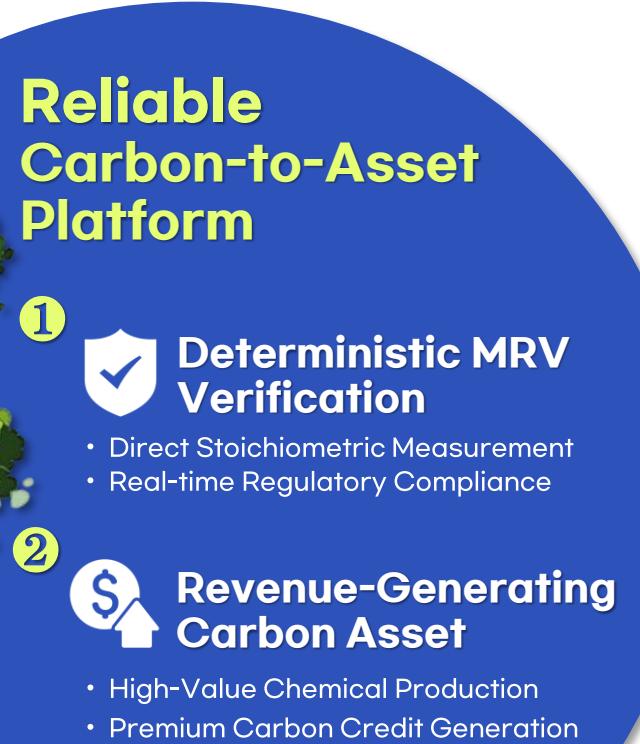
③ Carbon Tax Expansion

- Cost Volatility:** Unpredictable financial burden from rising carbon prices.
- OpEx Increase:** Structural surge in operating expenses for high emitters.

- ✓ **Carbon management has evolved from voluntary CSR into a critical financial risk driven by global regulations.**
- ✓ **Problems :** Nature-based and indirect methods face regulatory limits due to **MRV data uncertainty**.

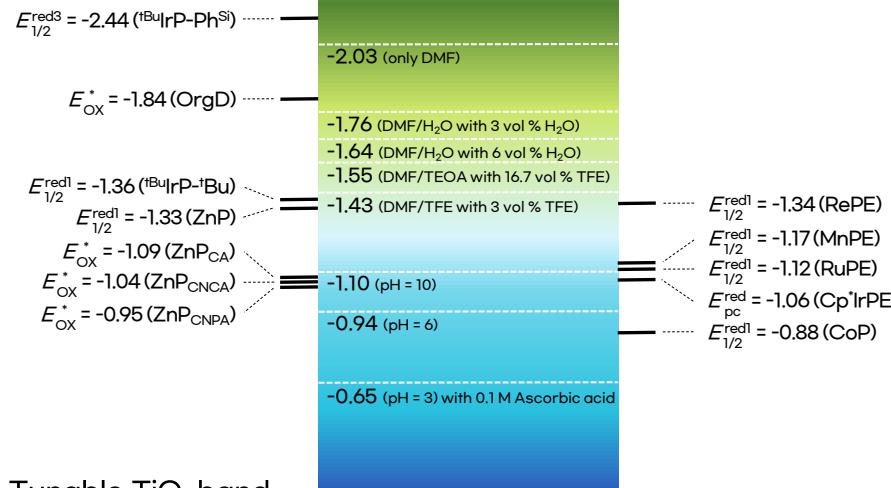


Category	Core Limitation	Business Impact
Measurement	<ul style="list-style-type: none"> Estimation-based Indirect Data Dependency on Activity Indices & External Variables 	<ul style="list-style-type: none"> Carbon Credit Value Discount Greenwashing Risk
Reporting	<ul style="list-style-type: none"> Delayed & Discrete Reporting Process Changes & Accidents 	<ul style="list-style-type: none"> Compliance & Border Barriers Carbon Liability Disclosure Violation
Verification	<ul style="list-style-type: none"> High-Cost Third-Party Subjectivity Inconsistency in Audits & Document Criteria 	<ul style="list-style-type: none"> Asset Illiquidity & High OPEX Extended Credit Lead Time & Recurring Expenses



02 Technology Overview

TiO₂ CB



Tunable TiO₂ band alignment enables controlled and repeatable electron injection.

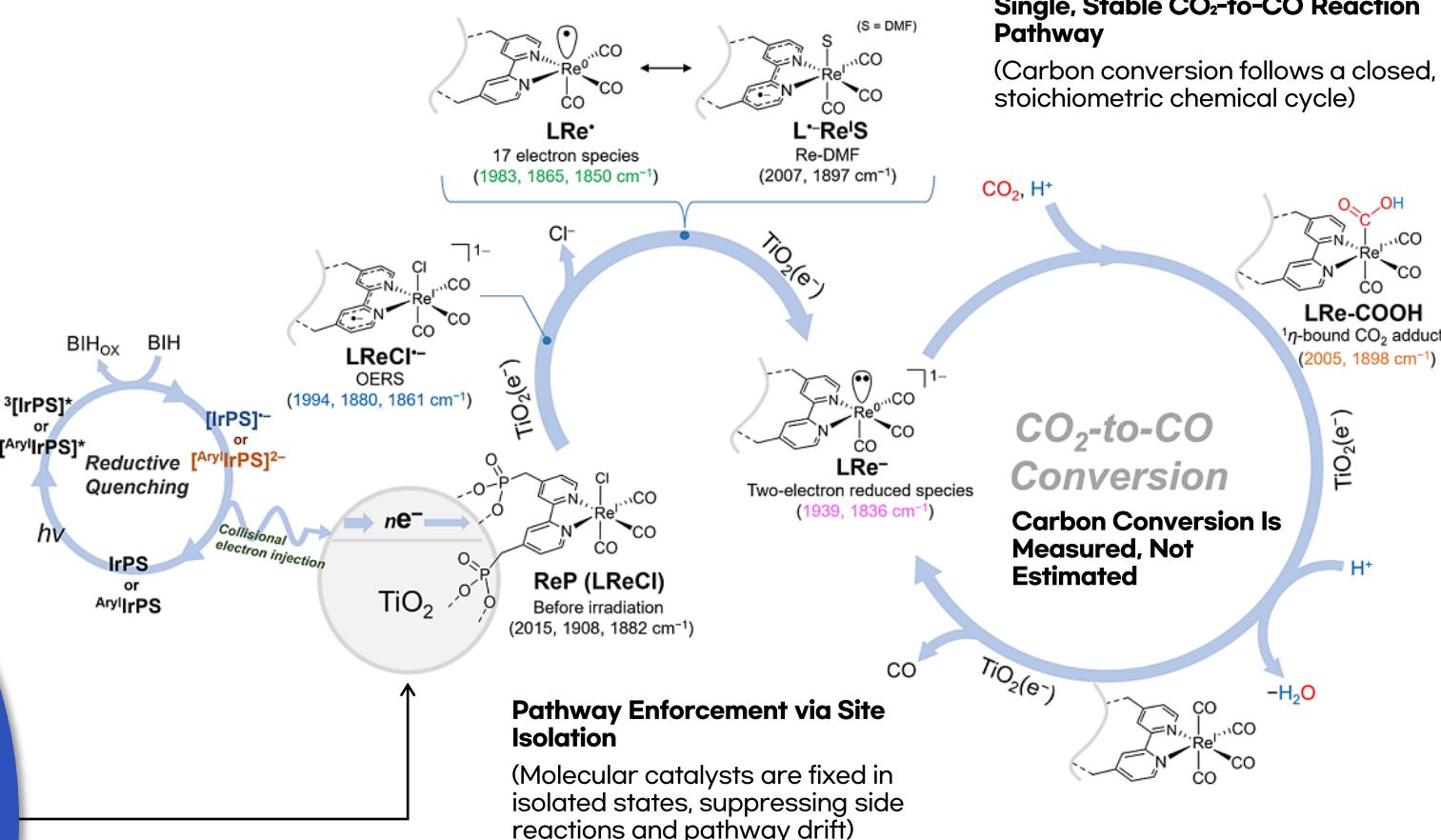
1 Energetic feasibility (E_{fb} tuning)

TiO₂ flat-band potential is tunable by solvent/additives, enabling optimized energetic alignment for PS \rightarrow TiO₂ \rightarrow catalyst electron transfer.

2 Pathway enforcement (site isolation)

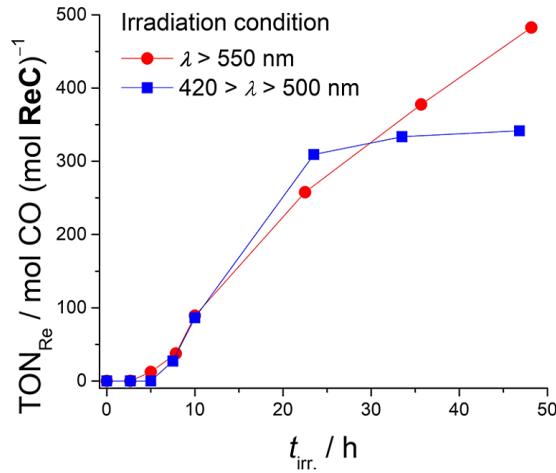
TiO₂ fixes the catalyst in an isolated state, enforcing a single, stable CO₂ reduction pathway.

- ✓ A Chemically Deterministic Platform for Direct CO₂-to-CO Conversion.
- ✓ Electron Flow and Reaction Pathways Are Explicitly Engineered.



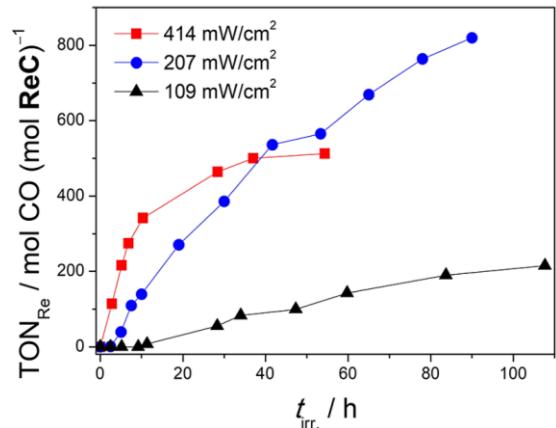
03 Key Features & Advantages

① Stable CO Production



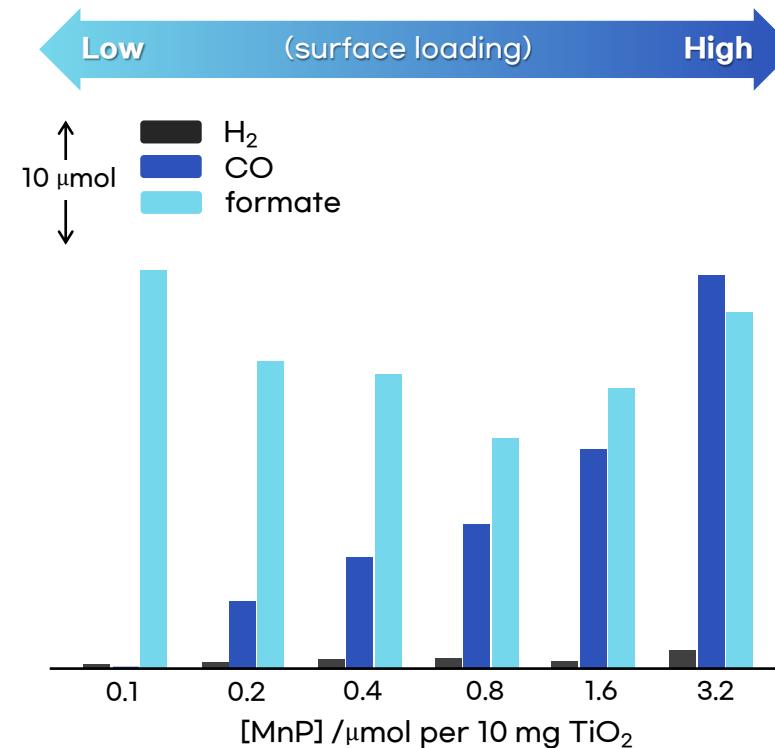
- CO production remains stable over time under optimized irradiation wavelengths.
- Enables long-term operation through light-spectrum control.

② Tunable CO Productivity



- CO productivity scales with light intensity within an optimal operating window.
- Maximizes output while minimizing energy-driven degradation.

- ✓ Stable and tunable CO_2 conversion enables reliable long-term carbon utilization.
- ✓ Programmable carbon outputs unlock scalable carbon-to-asset applications.



- Product selectivity shifts from formate to CO with increasing surface loading.
- Carbon outputs are programmable within a single platform.

1 Feature



- Stable CO Production
- Tunable Carbon Outputs

Deterministic CO_2 conversion with stable operation and programmable product selectivity.

2 Advantage

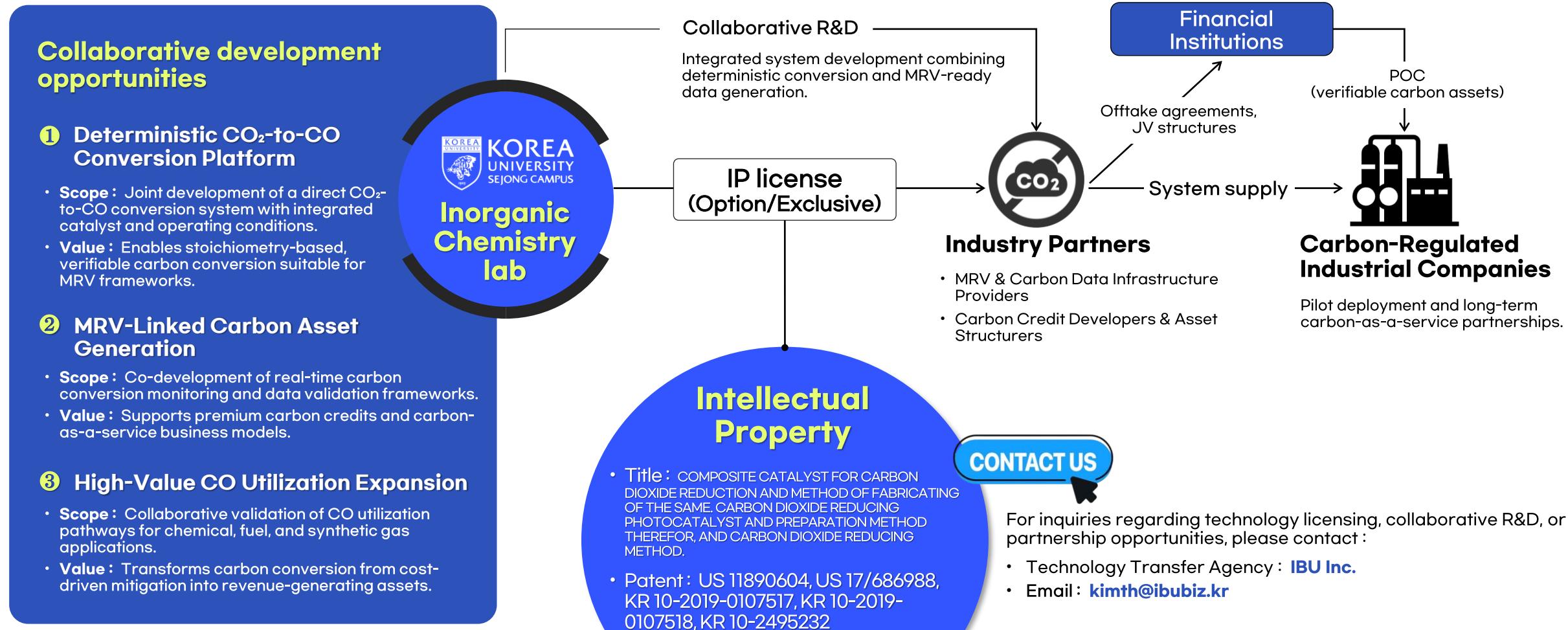


- Improved reliability
- Improved scalability

Audit-ready carbon conversion enabling long-term operation and flexible carbon-to-asset strategies.

04 Strategic Business Opportunities

- ✓ **Business Vision** : A deterministic **carbon conversion platform** enabling reliable, auditable, and asset-grade CO₂ utilization.
- ✓ **Engagement Model** : Open to technology licensing, pilot-scale co-development, and joint MRV-linked carbon asset projects.



**Partnering to
unlock new business opportunities
through innovation.**

ADDRESS | (30019) Korea University Sejong Campus, 2511 Sejong-ro, Sejong
WEBSITE | <https://sejong.korea.ac.kr>.

