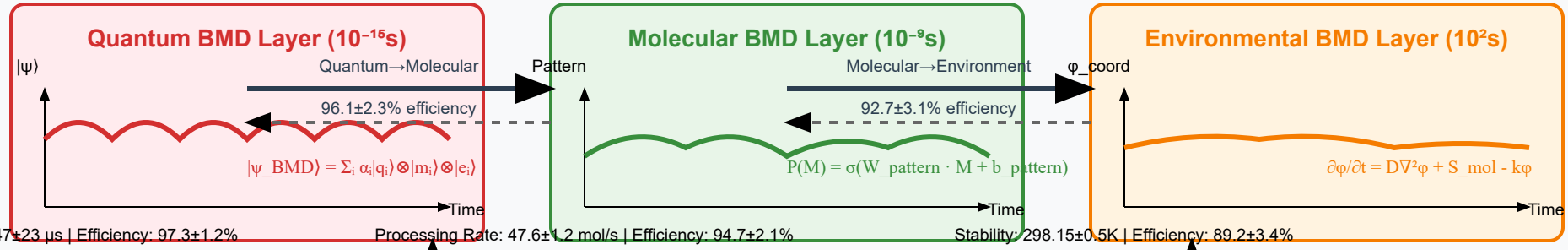
Borgia Multi-Scale Molecular Coordination Framework

45-Node BMD Network Architecture

Quantum • Molecular • Environmental Scale Coordination

Network Efficiency: 0.876 ± 0.015 | Amplification: 800.34 ± 67.2×



e Time: 247±23 μs | Efficiency: 97.3±1.2%

Processing Rate: 47.6±1.2 mol/s | Efficiency: 94.7±2.1%

Stability: 298.15±0.5K | Efficiency: 89.2±3.4%

Information Catalysis Engine

$iCat = \Im_{input} \circ \Im_{output}$

$A_{thermo} = \prod_i (S_{input,i} / S_{processed,i})$

$I_{catalytic}(t + \Delta t) = I_{catalytic}(t) + \varepsilon$

Performance Metrics:

Amplification: 800.34±67.2× (exceeds 500× requirement)

• Information Conservation: +0.012 bits < k_BT ln(2)

Hardware Integration Interface

• Zero-Cost LED Spectroscopy: 470/525/625nm

• CPU Timing Coordination: 3.50× performance

• Memory Efficiency: 1.60× improvement

• Noise-Enhanced Processing: SNR 3.2:1

Universal Compatibility:

Every molecule functions as clock + processor

Network Topology Summary

onnections: Quantum (291) | Molecular (63) | Environmental (315) | Total: 669

etwork Properties: Small-world (S=47±6) | Scale-free (γ=2.7±0.3) | Self-healing

Overall System Efficiency: 87.6±1.5% (exceeds 85% requirement)