# TABLE OF CONTENTS

## VOLUME 1

### FIELD CASE STUDIES 1: CHEMICAL

Evaluation of Carbon Footprint for a Hydrocarbon Foam EOR Field Pilot .......................................................... 1  
*Orlando Castellanos Diaz, Amit Katiyar, Armin Hassanzadeh, Matt Crosley, Troy Knight, Pete Rozowski*

Review of Offshore Chemical Flooding Field Applications and Lessons Learned .................................................. 12  
*Ming Han, Subhash Ayirala, Ali Al-Yousef*

### GAS INJECTION 1: ANALYTICAL AND EXPERIMENTAL METHODS

Oil and Gas Relative Permeability as a Function of Fluid Composition ................................................................. 22  
*Lauren Churchwell, David DiCarlo*

Nanoparticle Stabilized Strong Foam for EOR in High Salinity Fractured Carbonate Reservoirs .................... 40  
*Wang Xuezhen, Mohanty K Kishore*

Analytical Method for Forecasting ROZ Production in a Commingled MOC and ROZ CO2 Flood ............... 53  
*David Wayne Hampton, Ahmed Wagia-Alla*

### WATERFLOODING 1: MECHANISTIC MODELING CHALLENGES ACROSS SCALES: LABORATORY AND FIELD

Fast Screening of LSW Brines Using QCM-D and Crude Oil-Brine Interface Analogs ........................................ 65  
*M. P. Yutkin, K. M. Kaprielova, S. Kamireddy, A. Gmira, S. C. Ayirala, C. J. Radke, T. W. Patzek*

Upscaling Low Salinity Benefit from Lab-Scale to Field-Scale - An Ensemble of Models with a Relative Permeability Uncertainty Range ................................................................. 74  
*Aboulghasem Kazemi Nia Korrani, Gary Russell Jerauld*

Reaction Kinetics Determined from Core Flooding and Steady State Principles for Stevns Klint and Kansas Chalk Injected with MgCl2 Brine at Reservoir Temperature ......................................................... 91  
*Pål Østebø Andersen, Reidar Inge Korsnes, Andre Tvædt Olsen, Erik Bukkholm*

### NOVEL EOR 1: FIELD APPLICATIONS

CO2 Foam Pilot in a Heterogeneous Carbonate Reservoir: Analysis and Results ................................................. 116  
*Zachary Paul Alcorn, Arne Graue, Metin Karakas*

First Thermo-Responsive Polymer Field Evaluation in a High Temperature Reservoir of Golfo San Jorge, Argentina. Promising Results for Cost Optimization in a Polymer Project ........................................ 128  
*Maria Alejandra Hryc, Daniela Verónica Renta, Guillaume Dupuis, Thierry Leblanc, María Eugenia Peyrebonne Bispe, Mayra Goldman, Martin Villambrosa, Gaston Fondevila Sancet*

Bioremediation by Indigenous Microbes: A Green Approach to Degrade Polymer Residue ............................ 141  
*Songyuan Liu, Bo Lu, Chao-ya Sie, Yifan Li*
## FIELD CASE STUDIES 2: UNCONVENTIONALS

Small Scale EOR Pilot in the Eastern Eagle Ford Boosts Production .................................................. 150  
Tim Bozeman, Will Nelle, Quoc Nguyen

A Novel Gas Dispersible Foam Technology Can Improve the Efficiency of Gas Injection Processes for IOR-EOR Operations in Unconventional Reservoirs ................................................................. 164  
Kelly Díez, Alonso Ocampo, Alejandro Restrepo, Jonny Patiño, Juan Rayo, Diego Ayala, Luis Rueda

Discussion of the Effect of Shut-In After Fracturing on Oil Recovery .................................................. 173  
James J Sheng, Fanhua Zeng

## GAS INJECTION 2: FIELD, LAB BASED CASE STUDIES AND MODELING

Evaluation of Historical and Ongoing Double Displacement Process in Yates Field Unit ......................... 184  
Saeedeh Mohebbinia, Stephen Peter Pennell, Raul Valdez, Kiomars Eskandaridalvand

Modeling of Laboratory Gas Flooding in Tight Chalk with Different Non-Equilibrium Treatments ........... 209  
Seyedamir Mirazimi, Dan Olsen, Erling Halfdan Stenby, Wei Yan

Laboratory Analyses and Compositional Simulation of the Eagle Ford and Wolfcamp Shales: A Novel Shale Oil EOR Process ................................................................. 227  
Amanda Marilyn Bustin, R. Marc Bustin, Robert Downey, Kiran Venepalli

## WATERFLOODING 2: FIELD IMPLEMENTATION OF OPTIMIZED SOLUTIONS AND WATER QUALITY

Optimizing Waterflooding EOR Through Cyclic Injection: A Case Study on the Hoople Field, Midland Basin, West Texas ................................................................. 240  
Mario Jose Farias, Xijin CJ Liu

In-Depth Water Conformance Control: Design, Implementation and Surveillance of the First Thermally Active Polymers Treatment TAP in a Colombian Field ............................................. 250  
Mauricio Gutierrez, Joan Sebastian García, Ruben Hernan Castro, Tatiana Yiceth Zafra, Jonattan Rojas, Rocio Macarena Ortiz, Henderson Ivan Quintero, Hugo Alejandro Garcia, Luis Niño, Jhon Amado, Diego Quintero, Mojtaba Kiani

Improved Amott Cell Procedure for Predictive Modeling of Oil Recovery Dynamics from Mixed-Wet Carbonates ................................................................. 264  
Ksenia Kaprielova, Maxim Yutkin, Ahmed Gmira, Subhash Ayirala, Clayton Radke, Tadeusz W. Patzek

## NOVEL EOR 2: NANOTECHNOLOGIES IN EOR

First Nanoparticle-Based EOR Nano-EOR Project in Japan: Laboratory Experiments for a Field Pilot Test ................................................................. 283  
Yutaro Kaito, Ayae Goto, Daisuke Ito, Satoru Murakami, Hirotake Kitagawa, Takahiro Ohori

Miniature Viscosity Sensors for EOR Polymer Fluids ................................................................. 304  
Miguel Gonzalez, Subhash Ayirala, Lyla Maskeen, Abdulkarim Sofi
Design of Surrogate Oils for Surfactant-Brine-Oil Phase Behavior ................................................................. 315
   Jaebum Park, Kishore Mohanty

CHEMICAL EOR 1: CONVENTIONAL AND NOVEL POLYMER TECHNOLOGY

Use of Horizontal Injectors for Improving Injectivity and Conformance in Polymer Floods ......................... 328
   Jongsoo Hwang, Shuang Zheng, Mukul Sharma, Maria-Magdalena Chiotoroiu, Torsten Clemens

Pressure Barrier Applicability to Polymer Flood Design .................................................................................. 346
   Dongmei Wang, Shane Namie, Randall Seright

Polymer Selection for Sandstone Reservoirs Using Heterogeneous Micromodels, Field Flow Fractionation and Corefloods .................................................................................................................. 364
   Ante Borovina, Rafael E. Hincapie Reina, Torsten Clemens, Eugen Hoffmann, Jonas Wegner, Johannes Steindl

CONFORMANCE CONTROL 1

Selective Crystallization - En Route to In-Situ Deep Conformance Control .................................................. 382
   Ali Binabdi, Subash Ayirala, Ahmed Gmira, Theis Solling

Toward Deep Diversion for Waterflooding and EOR: From Representative Delayed Gelation to Practical Field-Trial Design .................................................................................................................. 390
   Abdulkareem M. AlSofi, Waleed A. Dokhon

Comprehensive Evaluation of a Novel Recrosslinkable Hyper Branched Preformed Particle Gels for the Conformance Control of High Temperature Reservoirs .......................................................... 398
   Tao Song, Mohamed Ahdaya, Shuda Zhao, Yang Zhao, Thomas Schuman, Baojun Bai

VISCOSOUS HEAVY OIL 1: CHEMICAL AND THERMAL METHODS 1

Oil Recovery Prediction for Polymer Flood Field Test of Heavy Oil on Alaska North Slope Via Machine Assisted Reservoir Simulation ........................................................................................................ 412
   Cody Douglas Keith, Xindan Wang, Yin Zhang, Abhijit Y Dandekar, Samson Ning, Dongmei Wang

Optimizing Production Performance, Energy Efficiency and Carbon Intensity with Preformed Foams in Cyclic Steam Stimulation in a Mature Heavy Oil Field: Pilot Results and Development Plans .................................................................................................................. 443
   Romel Antonio Pérez, Héctor Arnoldo Rodríguez, Gabriel Julian Rendón, Brayan Guillermo Plata, Lina Marcela Salinas, Carolina Barbosa, Luis Eduardo García, Fernando Andrés Rojas, Jorge Armando Orrego, Lucy Johanna León, José Gabriel St. Bernard, Eduardo Jose Manrique

Polymer Injectivity Enhancement Using Chemical Stimulation: A Multi-Dimensional Study .......................... 456
   Sriram Chandrasekhar, Dennis Arun Alexiis, Julia Jin, Taimur Malik, Varadarajan Dwarakanath

Energy Efficient Steam-Based Hybrid Technologies: Modeling Approach of Laboratory Experiments ................................. 472
   Romel Antonio Pérez, Hugo Alejandro García, Dubert Gutiérrez, Hector Arnoldo Rodríguez, Sudarshan Mehta, Robert Gordon Moore, Matthew Ursenbach, Belenitza Sequera-Dalton, Eduardo Jose Manrique
CHEMICAL EOR 2: SURFACTANT STUDIES

Mobility Of Microemulsions: A New Method to Improve Understanding and Performances of Surfactant EOR .................................................. 489
David Rousseau, Clémence Le Gallo, Nicolas Wartenberg, Tiphaine Courtaud

Chemical Flood with a Single Surfactant ................................................................. 503
Krishna Panthi, Kishore K. Mohanty

Mapping Chemical EOR Technologies to Different Reservoir Settings at Harsh Conditions in North Kuwait .................................................. 521
Abdul-Aziz Al-Dhuwaihi, Sanhita Tiwari, Bodoor Baroon, Reem AlAbbas, Moudi Al-Ajmi, Gerbert De Bruijn, Randa Nabulsi, Issa Abu Shiekah, Gerard Glasbergen, Diederik van Batenburg

GAS INJECTION 3: FOAM APPLICATIONS

Potential and Challenges of Foam-Assisted CO2 Sequestration .................................. 532
William R. Rossen, Rouhi Farajzadeh, George J. Hirasaki, Mohammadreza Amirmoshiri

New Mechanistic Approach to Trapped Foam in Population-Balance Model Enabling Improved Prediction of N2 and CO2 Foams Rheology in Porous Media ................................................................. 552
Kun Ma, Khalid Mateen

Modeling of Foam Flow in Porous Media in the Presence of Residual Oil ........................ 568
Muhammad Majid Almajid, Anthony R. Kovscek

VISCOS HEAVY OIL 2: CHEMICAL AND THERMAL METHODS 2

New Paradigm in the Understanding of In Situ Combustion: The Nature of the Fuel and the Important Role of Vapor Phase Combustion ................................................................. 579
Dubert Gutiérrez, Don Mallory, Gord Moore, Raj Mehta, Matt Ursenbach, Andrea Bernal

Comprehensive Fluid Compositional Analysis Program to Support the Interpretation of Chichimene Field In-Situ Combustion Pilot ........................................................................ 604
Eduardo Jose Manrique, Marta Liliana Trujillo, Juan Carlos Lizcano, Diego Alejandro Cardenas, Jose Walter Vanegas, Fredy De Jesus Portillo, Helmut Salazar, Nicolas Caicedo

A Study of the Impact of Permeability Barriers on Steam-Solvent Coinjection Using a Large-Scale Physical Model ................................................................. 620
Kai Sheng, Ryosuke Okuno, Abdullah Al-Gawfi, Petro Nakutnyy

CHEMICAL EOR 3: POLYMER AND SURFACTANT MODELING

An Unconventional Approach to Model a Polymer Flood in the Kalamkas Oilfield ............ 647
Marat Sagyndikov, Randall Seright, Nauryzbek Tuyakov

Towards More Representative Workflows for Designing Robust Surfactant EOR Formulations ................................................................. 665
Nicolas Wartenberg, Dylan Blaizot, Matthieu Mascle, Aurélie Mouret, David Rousseau

Fundamental Improvements in Modeling Surfactant Behavior in Reservoir Simulators ......... 679
Leonard Yujya Chang, Zhitao Li, Haishan Luo, Gary Arnold Pope
RESERVOIR CHARACTERIZATION 2: TRACERS VISUALIZATION AND CROSSFLOW

Hydrothermal Stability and Transport Properties of Optically Detectable Advanced Barcoded Tracers with Carbonate Rocks in the Presence of Oil ................................................................. 704
Hooisweng Oow, Sehoon Chang, Gawain Thomas, Hsieh Chen, Salah H. Saleh, Mohammad B. Otaibi, Subhash Ayirala

Modeling of Chemical Tracers to Estimate Oil Volume Contacted and Sweep Efficiency in Porous Media Under Countercurrent Spontaneous Imbibition .................................................. 716
Moises Velasco-Lozano, Matthew Thomas Balhoff

A Visualization Study of Low-Tension Polymer Flood for Viscous Oil Reservoirs ............................................. 734
Yujia Guo, Haofeng Song, Kishore K. Mohanty

RESERVOIR AND FIELD MANAGEMENT 1: UNCERTAINTY AND RISK MANAGEMENT OF EOR/IOR

Re-Injection of Produced Polymer in EOR Projects to Improve Economics and Reduce Carbon Footprint ............................................................................................................................... 753
Pinaki Ghosh, Ryan R Wilton, Annalise Bowers, Thomas O’Brien, Yu Cao, Clayton Wilson, Mahmoud Ould Metidji, Guillaume Dupuis, Ravi Ravikiran

Dynamic Changes of Pore Structure During CO2 Mineral Sequestration in Shale ................................................. 774
Yang Ming Yang, Hao Chen

Enabling Increased Oil Recovery from Deep-Water Viscous Oil Reservoirs by Improved Performance Prediction of Multiphase Viscous Pumps .................................................. 782
Karel De Raeve, Xavier Gaillard, Pierre-Jean Bibet

NOVEL EOR 4: ADVANCES IN WATERFLOODING

Interference Analysis in Reservoirs with Bottom-Water Drive During Water Injection Processes Through Subsurface Connectivity ............................................................................. 798
Vladimir Martinez, Erdal Ozkan, Heber Cinco Ley

Impact of Brine Chemistry on Waterflood Oil Recovery: Experimental Evaluation and Recovery Mechanisms .............................................................................................................................. 813
Behdad Aminzadeh, Sriram Chandrasekhar, Mayank Srivastava, Tom Tang, Art Inouye, Mauricio Villegas, Monika Valjak, Varadarajan Dwarakanath

VOLUME 2

SmartWater Based Synergistic Technologies: A Next Recovery Frontier for Enhanced Oil Recovery ........................................... 828
Subhash C. Ayirala, Abdulkareem M. AlSofi, Zuhair A. AlYousef, Jinxun Wang, Moataz O. Abu Alsaud, Ali A. AlYousef

CHEMICAL EOR 4: WETTABILITY ALTERATION

Physics-Based and Data-Driven Wettability Alteration Model ............................................................................... 843
Fabio Bordeaux-Rego, Mehran Mehrabi, Esmail Eltahan, Kamy Sepehrnoori
Surfactant Enhanced Oil Recovery from Tight Carbonates: Core-Scale Experiments to Reservoir-Scale Modeling ................................................................. Yue Shi, Kishore Mohanty

Modelling the Impact of Surface Charge on Wettability Alteration in Low Salinity Waterflooding ............... Yogarajah Elakneswaran

**IOR/EOR IN UNCONVENTIONAL RESERVOIRS 1: GAS INJECTION IN UNCONVENTIONAL RESERVOIRS**

Impact of Stimulated Reservoir Volume in the Efficacy of Miscible Gas Injection EOR in Shale Reservoirs ........................................................................................................... Raki Sahai, Rouzbeh G. Moghanloo

Gas Injection Pilot Design Simulation Model in Eagle Ford .................................................................................. Basar Basbug, Hulya Sarak, Tuba Firincioglu, Chet Ozgen, Claudia Parada Machado, Chengwu Yuan, Philip Chapman

A Pore-Scale Study on the Shale-Gas Transport with CO2 Injection Applying the Lattice Boltzmann Method .............................................................................. Zhuoran Li, Jiahui You, Guan Qin

**CONCEPTUAL MODELING 1: MODELING NEW CONCEPTS**

Revised Correlation for Accurate Estimation of CO2-Brine Interfacial Tension at Reservoir Conditions ........................................................................................................... Gary Russell Jerauld, Aboulghasem Kazemi Nia Korrani

Predictive Model for Relative Permeability Using Physics-Based Artificial Neural Networks ......................... Hanif Farrastama Yoga, Prakash Purswani, Russell Taylor Johns

State-of-the-Art Laboratory Methods for Chemical EOR .......................................................................................... Robert Matthew Dean, Chris James Britton, Jonathan William Driver, Gary Arnold Pope

A Molecular Level Study of Water-Oil Interface in the CO2 EOR Under Low Pressure Condition .......... Qiu Hao Chang, Liangliang Huang, Xingru Wu

**NOVEL EOR 5: NOVEL EOR LABORATORY**

An Investigation of In-Situ Upgrading the Shale Oil By Air Injection ................................................................. Jianhua Qin, Tao Wan, Jing Zhang, Sheng James

Experimental and Simulation Based Interpretation of Characteristic Behavior During Forced and Spontaneous Imbibition in Strongly Water-Wet Sandstones ........................................ Pål Østebø Andersen, Liva Salomonsen, Dagfinn Sleveland

Screening of Topside Challenges Related to Polymer Presence in the Back Produced Fluids – Casabe Case Study .................................................................................. Aurélie Mouret, Christian Blazquez-Egea, Isabelle Hénaut, Cyril Jermann, Mathieu Salain, Henderson Quintero, Mauricio Gutierrez, Tito Acosta, Robinson Jimenez, Nadine Vargas
CHEMICAL EOR 5: FOAM AND SOLVENTS

Experimental Investigation of Transient Foam Flow in a Long Heterogeneous Consolidated Sandstone ................................................................. 1098

Muhammad Majid Almajid, Anthony R. Kovscek

Evaluation of Environmentally Friendly Green Solvents for the Recovery of Heavy Oils ......................... 1117

Tanya Ann Mathews, Jairo Cortes, Berna Hascakir

Polymer Stabilized Foam Rheology and Stability for Unconventional EOR Application ......................... 1126

Christopher Griffith, Julia Jin, Harry Linnemeyer, Gayani Pinnawala, Behdad Aminzadeh, Samual Lau, Do Hoon Kim, Dennis Alexis, Taimur Malik, Varadarajan Dwarakanath

Understanding Foam Flow in Rough Carbonate Fractures ................................................................. 1137

Anuradha Radhakrishnan, Alex Gigliotti, Keith P. Johnston, David DiCarlo, Maša Prodanovic

IOR/EOR IN UNCONVENTIONAL RESERVOIRS 2: THE ROLE OF CHEMICALS IN UNCONVENTIONAL RESERVOIRS

Lab and Pilot-Scale Evaluation of Stable Foam for Drilling in High Temperature Environment ............ 1149

Christopher Griffith, Harry Linnemeyer, Do Hoon Kim, Ruth Hahn, Jimin Zhou, Eric Upchurch, Taimur Malik, Angel Wileman, Griffin Beck, Swanand Bhagwat, Luis Gutierrez

Slickwater Friction Reducer Performance Evaluation and Application .................................................... 1166

Gojko Matovic, Timothy Theriot, Harold Linnemeyer, Marlon Solano, Michael Fuller, Seung Han, Amos Kim, Nabijan Nizamidin, Do Hoon Kim, Taimur Malik, Varadarajan Dwarakanath

Conformance Improvement in Fractured Tight Reservoirs Using a Mechanically Robust and Eco-Friendly Particle Gel PG ...................................................... 1178

Bing Wei, Runxue Mao, Qingtao Tian, Xingguang Xu, Lele Wang, Jinyu Tang, Jun Lu

CCUS 1: CCUS IN EOR AND SEQUESTRATION

Rapid Estimation of Carbon Dioxide Stored in CO2 EOR Operations for Screening Purposes ............... 1191

Andrea Carlino, Ann Helen Muggeridge, Philip Craig Smalley

Development of Site Characterization and Numerical Modeling Workflow of Acid Gas Injection for MRV-45Q Application ................................................................. 1210

Samuel Acheampong, William Ampomah, Jiawei Tu, Robert Balch, Matt Eales, Robert Trentham, Richard Esser, Candace Cady, Martha Cather, El-Kaseeh George

Towards Quantitative Approach to Evaluating Greenhouse Gas Leakage from CO2 Enhanced Oil Recovery Fields ....................................................................... 1227

Bailian Chen, Mohamed Z. Mehana, Rajesh J. Pawar

NOVEL EOR 3: TOWARDS NET ZERO CARBON

A Comparative Study of the Impact of the CO2 Properties on the Thermal Output of a Geothermal Well ........................................................................... 1238

Ram Ratanakar, Birol Dindoruk, Silviu Livescu, Sandarbh Gautam
Coupled Well-Reservoir Heat Modelling for Closed-Loop Geothermal Wells - A Feasibility Study .......... 1257
Silviu Livescu, Birol Dindoruk

Direct Contact Steam Generation Reduces Carbon Intensity ................................................................. 1269
Brian Kay

Recent Advances of Alkali-Surfactant-Polymer ASP Flooding in China ....................................................... 1278
Hu Guo, Xiuxin Lyu, Menghao Zhang, Yang Xu, En Meng, Huifeng Liu, Zhengbo Wang, Hongtao Fu, Yuxuan Zhang, Kaoping Song

CONCEPTUAL MODELING 2: MODELING RECOVERY MECHANISMS

Assisted 3D Model Construction and Facies Propagation in Golfo San Jorge Basin Reservoirs for Modelling EOR .................................................................................................................................................. 1311
Jose Damian Llanes, Alejo Viñales, Juan Juri

Fluid – Fluid Interfacial Area and Its Impact on Relative Permeability - A Pore Network Modeling Study ..................................................................................................................................................... 1328
Sanchay Mukherjee, Russell T. Johns, Sajjad Foroughi, Martin J. Blunt

Aquifer Influx Versus Water Injection in GoM........................................................................................................ 1342
Mohammad Reza Fassihi, J. P. Blangy

Microscale Dynamics of Oil Connectivity and Mobilization by Controlled-Ionic-Composition Waterflooding at Elevated Temperature Using Synchrotron 3D X-Ray Microscopy ........................................................................................................ 1352
Tianzhu Qin, Paul Fenter, Mohammed AlOtaibi, Subhash Ayirala

CHEMICAL EOR 6: POLYMER FIELD CASE STUDIES AND TREATMENT TECHNOLOGY

Viscous Oil Polymer Flood Milne Point Field Case History Concept to Full Field Implementation........... 1362
Reid Edwards, Almas Aitkulov, Connor Redwine, Katherine Cunha

Polymer Containing Produced Fluid Treatment for Re-Injection: Lab Development to Field Deployment .................................................................................................................................................. 1400
Gayani Wasana Pinnawala, Sumitra Subrahmanyan, Dennis Arun Alexis, Sujeewa Senarath Palavangoda, Harold Linnemeyer, Gojko Matovic, Do Hoon Kim, Timothy Theriot, Taimur Malik, Varadarajan Dwarakanath

Confirmation of Polymer Viscosity Retention at the Captain Field Through Wellhead Sampling ............ 1422
Geoffrey Johnson, Mehrdad Hesampour, Susanna Toivonen, Sirkku Hanski, Stina Silvonen, Nancy Lugo, Jennifer McCallum, Michael Pope

IOR/EOE IN UNCONVENTIONAL RESERVOIRS 3: NOVEL PRODUCTION CONCEPTS IN UNCONVENTIONAL RESERVOIRS

Full Cycle of Unconventional EOR with Microbial Technology – From Lab to Field.............................. 1434
Bo Lu, Songyuan Liu, Yifan Li, Brian Price

Gas-Oil Ratio GOR Characterization of Unconventional Wells in Eagle Ford............................................ 1442
Yajie Zhao, Jack Nohavitza, Ryan Williams, Wei Yu, Mauricio Xavier Fiallos-Torres, Reza Ganjdanesh, Kamy Sepehrooiri
A New Logistically Simple Solution for Implementing ASP/ACP in Difficult Environments –
Evaluation of Concept with High TAN Viscous Crude Oil .......................................................... 1631
  Jeffrey George Southwick, Karasinghe Nadeeka Upamali, Mina Fazelalavi, Upali Peter
  Weerasooriya, Chris James Britton, Robert Matthew Dean

Methods to Improve Accuracy and Performance in a Fully Implicit Surfactant Flood Simulator .............. 1644
  Xundan Shi, Choongyong Han, Christian Wolfsteiner, Yih-Bor Chang, Baris Güyagüler

Author Index