#### **Mission**

RCRL's mission is to use outcrop and subsurface geologic, geophysical, and petrophysical data from carbonate reservoir strata as the basis for developing new and integrated methodologies and concepts to better explain and describe the 3D reservoir environment, and to improve hydrocarbon recovery factors. In addition to this research mission, RCRL is dedicated to technology transfer and education, and consistently offers state-of-the-art training in the form of short courses, field seminars, in-house reviews of selected assets, and extensive graduate student supervision and guided research.

#### **Overall Research Goals**

RCRL approaches reservoir characterization and exploration through four main scales of investigation: (1) platform-to-basin-scale stratigraphy; (2) reservoir architecture, including both matrix and nonmatrix systems (e.g., fractures and paleokarst); (3) structural and geomechanical properties characterization; and (4) pore networks and their reservoir distribution.

#### Membership and Funding

We invite your company to participate in the continuation of the RCRL Carbonate Reservoirs Research Program for 2019. In 2019, the annual RCRL Industrial Associates contribution to the program will continue to be \$55,000 per year. To encourage sponsors to commit to a 2-year agreement so that we can better plan a longer-range research program and reduce the time and effort in securing agreements, we offer a 2-year (2019 and 2020) rate of \$50,000 per year. The agreement would be such that a Memorandum of Agreement (MOA) would be signed agreeing to a 2-year commitment, and payment would be due at the beginning of each year.

#### **Materials**

Industrial sponsors receive research results at annual review meetings, in short courses, during mentoring activities, in publications, and on the continually updated, members-only RCRL website database (http://www.beg.utexas.edu/rcrl/ members/). The searchable website protects the investment in RCRL research and makes previously presented material easy to locate. The data area contains digital presentations, including archived video and annotated presentations, core workshop guidebooks, and field-trip guidebooks. Supplemental data such as maps, core photos, porosity and permeability data, and digital outcrop reservoir models are available through our database.

#### Interaction

We host an Annual Review Meeting with an associated field trip and core workshop and a five-day training workshop is offered in the spring. These workshops are interactive and utilize subsurface data, along with applicable outcrop analogs to emphasize applications of key elements that are important to understanding carbonate systems and the importance to hydrocarbon production. In addition to these two events, we host focused workshops at the BEG and have several on-site meetings with members at their offices.

#### Contact

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## **Research Topics for 2019**

# Early Permian shelf-to-basin syntectonic to early post-tectonic stratigraphy of the Delaware and Midland Basins

- Stratigraphic architecture of Wolfcampian to Guadalupian platforms, shelf margins, slopes and basin fill, Glass Mountains to Southern Delaware Basin
- Wolfcampian to Guadalupian shelf-to-basin framework of the Midland and Delaware Basins
- Characterization of mixed carbonate-siliciclastic slope to basin deposits in the Permian Basins and outcrop analogs of the Sierra Diablos and Ely-Bird Spring (EBS) Basin in SE California
- 3D fault framework within the northern Midland and Delaware Basins and implications for Early Permian synorogenic deformation and deposition
- Integrated reservoir characterization geocellular models at field scale of the Fasken Ranch and Red Tank 3D seismic areas
- Micropetrography and pore network characterization of Wolfcampian, Bone Spring and Avalon intervals in cores

# Austin Chalk lithofacies, mechanical and geochemical stratigraphy, fracture characterization, source rock evaluation, and reservoir performance characterization

- o Lithofacies and source rock evaluation characterization of Austin Chalk in Texas and Louisiana
- o Geochemical and mechanical stratigraphy of the Austin Chalk and transitional Eagle Ford
- o Natural fracture impact on Austin Chalk reservoir performance in south Texas
- o Mechanical stratigraphy and fracture characterization of the Austin Chalk in core and outcrop

#### Gulf of Mexico Carbonate Reservoir Settings, Margin Variability and Pore Systems

- Characterization of a Structurally Complex Lower Cretaceous Carbonate Platform, El Doctor, Central Mexico
- Documentation of Lower Cretaceous (Albian) large-scale microbial mounds and associated rudist mounds on the Comanche Shelf
- Upper Jurassic carbonates: regional controls and detailed subregional ooids reservoir distributions in Mexico (CONACIt-IMP-UT project, (*pending funds*)

#### Cenozoic carbonate platforms, high-resolution stratigraphy, and structural configuration

- Pleistocene Carbonate Stratigraphy Lessons for Better Understanding of Ancient Carbonate Flow Units, Platform Architecture, and Diagenetic Patterns
- o Miocene Carbonate Platform in the Mut and Adana Basins, southern Turkey
- Shelf-to-basin analysis of Tertiary mixed-carbonate siliciclastic depositional systems of Northwest Shelf, Australia

#### Modeling carbonate systems

- o Upper Cretaceous Reservoir Characterization of a Middle Eastern field
- o Regional scale 3D models of the Delaware Basin, Central Basin Platform, and Midland Basin
- Integrated structural and stratigraphic 3D outcrop model of the Grayburg-San Andres interval, Brokeoff Mountains, TX and NM

## **Database Updates**

o Searchable Catalog of RCRL Presentations and Extended Abstracts (coming in 2019)

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- Digital Outcrop Catalog to Arc-GIS (coming in 2019)
- o RCRL Core Workshop Database to Arc-GIS (coming in 2019)
- o Austin Chalk Core Properties to Arc-GIS
- o Reservoir Properties Digital Database of GOM carbonates

#### Industrial Associate Sponsors

The RCRL program has existed continuously since 1987, maintaining strong company sponsorship each year including 27 companies that supported our research initiatives in 2018

Anadarko	Devon	Marathon	Shell
Apache	Equinor	Matador	Sinopec
BHP Billiton	ExxonMobil	Оху	Total
Aramco	Fasken	Petrobras	University Lands
BP	Husky	Petrochina	Whiting
Chevron	Ion Geophysical	PetroQuest Energy	Wintershall
ConocoPhillips	Lundin Petroleum	Pioneer	Golder Associates

### **Research Group**

#### Principal Staff

- Dr. Charles Kerans, Goldhammer Chair of Carbonate Geology, Principal Investigator
- Dr. Robert Loucks, Senior Research Scientist, Principal Investigator
- Dr. Xavier Janson, Research Scientist
- Dr. Christopher Zahm, Research Scientist Associate
- Mr. Jerry Lucia, Retired Emeritus
- Mr. Josh Lambert, Research Scientist Associate
- Ms. Stephaine Lane, Program Coordinator

#### Associated Staff

- Dr. Toti Larson, MSRL, Research Scientist, Geochemist
- Mr. Donald Brooks, STARR, Rock Mechanics Technician
- Mr. Robin Dommisse, Research Scientist Associate
- Dr. Steve Ruppel, MSRL, Senior Research Scientist
- Dr. Hongliu Zeng, STARR, Senior Research Scientist
- Mr. Evan Sivil, MSRL, Research Technician

#### **Collaborative Researchers**

RCRL collaborate closely with the Quantitative Clastics Laboratory (QCL) for the characterization of the mixed carbonate siliciclastic slope to deepwater deposits in the Permian Basins and in Australia.

#### RCRL Students and Alumni

The RCRL is proud of the accomplishments of our current and former graduate students. Most of our graduated students are now working in the energy industry within research, production and exploration roles.

### Contact

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