

Naturally fractured reservoirs constitute a substantial percentage of remaining hydrocarbon resources; they create exploration targets in otherwise impermeable rocks, including under-explored crystalline basement; and they can be used as geological stores for anthropogenic carbon dioxide. Their complex behaviour during production has traditionally proved difficult to predict, causing a large degree of uncertainty in reservoir development. The applied study of naturally fractured reservoirs seeks to constrain this uncertainty by developing new understanding, and is necessarily a broad, integrated, interdisciplinary topic. This book addresses some of the challenges and advances in knowledge, approaches, concepts, and methods used to characterize the interplay of rock matrix and fracture networks, relevant to fluid flow and hydrocarbon recovery. Topics include: describing, characterizing and identifying controls on fracture networks from outcrops, cores, geophysical data, digital and numerical models; geomechanical influences on reservoir behaviour; numerical modelling and simulation of fluid flow; and case studies of the exploration and development of carbonate, siliciclastic and metamorphic naturally fractured reservoirs.