



**Elham MOHAMMED  
KHAIR**

**Home Country  
Sudan**

**Degree  
PhD in Petroleum  
Engineering**

**Expertise  
Petroleum  
Engineering**

**Research Focus  
Hydraulic Fracturing  
to Control Sand  
Production**

**Host University  
China University of  
Petroleum, China**

**Fellowship Awarded  
2007**

Elham Mohammed Khair was born and grew up in Khartoum, Sudan. Her family consists of three brothers and five sisters. Although she lost her father more than 10 years ago, as a child her parents strongly supported her academic aspirations.

After obtaining a diploma (first class) in petroleum engineering in 1995 from Sudan University of Science and Technology, Elham went on to graduate with a Bachelor of Engineering degree in 1999. She received a full scholarship for her master's degree in petroleum production engineering at China University of Petroleum in Beijing, which she obtained in 2003—the first woman in Sudan to have a master's degree in petroleum production engineering. She then returned to Sudan to work as a lecturer in the Department of Petroleum Engineering at Sudan University of Science and Technology. In 2007 she started her doctorate studies at China University of Petroleum.

Her research focuses on the use of hydraulic fracturing to control sand production of unconsolidated reservoirs. The production of oil sands has historically posed problems associated with poorly consolidated and unconsolidated formations, often with lost production due to formation failure and fine plugging of the production line or tools. Sand production may also cause environmental pollution due to the large amount of produced sand, which causes handling problems. Elham is modeling sand production in Sudan oil fields to design better sand control tools. She is attempting to reduce matrix velocity in reservoirs by selecting the optimum fracture fluid and the optimum proppant using both local Sudanese sand and guar gum or gum Arabic. She is also studying the relationship between flow rates and sand production for the Fulla oilfield in Sudan, and the optimum relationship between proppant diameter and formation particles diameter.

After completing her PhD, Elham will return to work at the College of Petroleum Engineering and Technology in Sudan University of Science and Technology.