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*Publication date:*
2021

*Document Version*
Publisher's PDF, also known as Version of record

## Developing polymer gels for sealing abandoned oil wells

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Numbers of ageing offshore oil and gas fields in North Sea are only increasing as more and more brownfields are reaching towards an end of their economically productive life. One of the upcoming challenges is to maximize production from what remains and to safely, economically and optimally abandon the wells, which can no more produce. Polymeric materials have gained momentum for plugging oil and gas fields in last two decades due to the advantage of tuning their physical and chemical properties for greater permeability in the pores and appreciable thermal and chemical resistance. In the current research, a range of polymer gels have been synthesized and their responsiveness towards salinity, pH and temperatures have been evaluated. It was found that synthesized polymer gels swelling characteristics can be controlled as a function of temperature and time.