

**(P19) iIRSL DATING OF K-FELDSPAR AND ITS APPLICATION TO
FAJIAGOUWAN, SALAWUSU SITE IN CENTRAL CHINA**

S. H. LI¹, B. LI¹, A.G. WINTLE², H. ZHAO³, G.M. YIN⁴

¹ Department of Earth Sciences, The University of Hong Kong, Pokfulam Road, Hong Kong, China.
shli@hku.hk

² Institute of Geography and Earth Sciences, University of Wales, Aberystwyth SY23 3DB, United Kingdom.

³ Key Laboratory of Desert and Desertification, Cold and Arid Regions Environment and Engineering Research Institute, Chinese Academy of Science, Lanzhou 730000, China.

⁴ State Key Laboratory of Earth Dynamics, Institute of Geology, China Seismological Bureau, Beijing, 100029, China.

Recently, a new isochron method (iIRSL) was proposed which uses the infrared stimulated luminescence signal from potassium (K) feldspar grains of different diameters (Li et al., 2008a). In this method, an isochron is constructed by plotting the natural radiation doses received by K-feldspar grains in a range of grain sizes as a function of their internal dose rates derived from the decay of ⁴⁰K and ⁸⁷Rb in the crystal lattice. This method was shown to have the potential to overcome the problems of anomalous fading (Li et al., 2008a) and changes in environmental dose rate (Li et al., 2008b). A method has been developed further using single K-feldspar grains. An physical mechanism is proposed for explaining the phenomena of apparent no anomalous fading shown by the internal doses. The potentials and limitations of the method are discussed.

Fossil evidence with firm chronological control for the presence of Homo sapiens in central China earlier than 30,000 years has been lacking so far. Bones have been found together with *in situ* stone tools in Salawusu site. It is more than 1000 km away from the coast in Central China. Here we present an age

of 55,000 years for a sediment layer containing stone tools, dated with iIRSL method. This age is consistent with the early part of the relatively warm interstadial period of Oxygen Isotope Stage 3 and is consistent with the dispersal of *H. sapiens* out of Africa, across Asia and into Australia by or before 50,000 years ago. However, the northerly location of Salawusu suggests that a single, coastal, dispersal through southern Asia was not necessarily the only or earliest route taken during the human diasporas. The age of 55,000 years at Salawusu has provided evidence for the earlier initial palaeolithic stone tool assemblage in Northeast Asia.

References:

Li, B., Li, S.H., Wintle, A.G. and Zhao, H. (2008a). Isochron dating of sediments using luminescence of K-feldspar grains. *Journal of Geophysical Research-Earth Surface* 113, F02026, doi:10.1029/2007JF000900.

Li, B., Li, S.H. and Wintle, A.G. (2008b). Overcoming environmental dose rate changes in luminescence dating of waterlain deposits. *Geochronometria*, 30, 33-40.