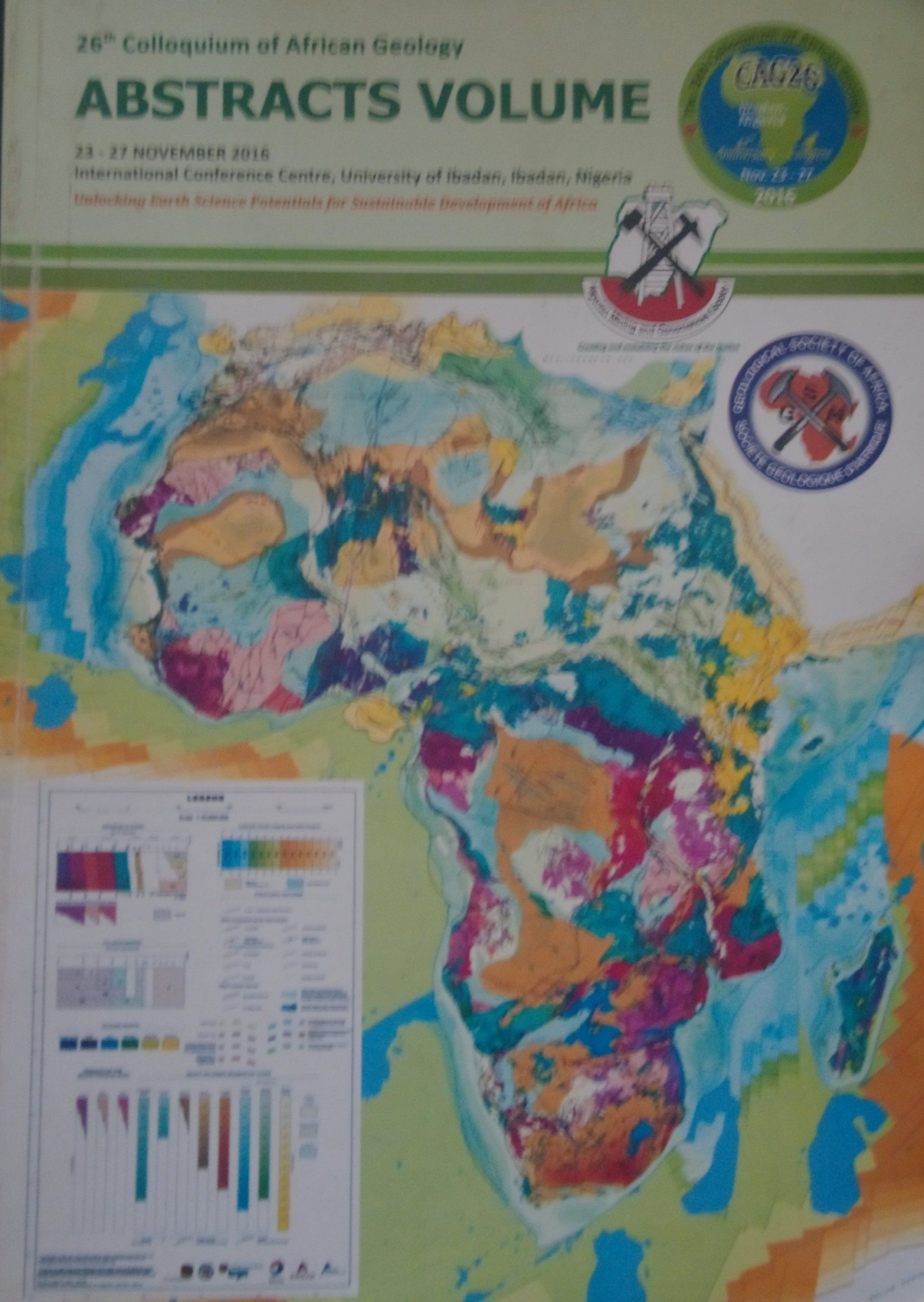
26th Colloquium of African Geology

ABSTRACTS VOLUME

23 - 27 NOVEMBER 2016

International Conference Centre, University of Ibadan, Ibadan, Nigeria

Unlocking Earth Science Potentials for Sustainable Development of Africa



ABSTRACTS VOLUME

26th Colloquium of African Geology

Organized by the Nigerian Mining and Geosciences Society

"Unlocking Earth Science Potentials for Sustainable Development of Africa"

International Conference Centre, University of Ibadan, Ibadan, Nigeria
23rd - 27th NOVEMBER 2016

The CAG26 Book of Abstracts was compiled and edited by:

Prof. M. N. Tijani
Dr. I. M. Akaegbobi
Dr. A. S. Olatunji

Sponsored by:

Nigerian Geological Survey Agency

Coal Deposits in Nigeria: Recent Organic Geochemical Data Interpreted in the Line of their Energy Conversion Efficiencies

N. G. Obaje[1], H. Hamza[2], N. G. Goki[3], A. N. Amadi[4], A. K. Aweda[1], U. M. Umar[1], T. M. Ozoji[1]

[1]*Department of Geology & Mining, IBB University, Lapai, Niger State, Nigeria.*
nobaje@yahoo.com, nobaje@ibbu.edu.ng
[2]*Department of Geology, Ahmadu Bello University, Zaria, Kaduna State, Nigeria*
[3]*Department of Geology & Mining, Nasarawa State University, Keffi, Nigeria*
[4]*Department of Geology, Federal University of Technology, Minna, Niger State, Nigeria*

Coal deposits in Nigeria occur within the Maastrichtian Mamu Formation in the Anambra Basin at Enugu (Enugu State), Owukpa (Benue State), Okaba, Ogboyaga and Omelehu (Kogi State); in the Turonian Awgu Formation in the Middle Benue Trough at Shankodi near Lafia-Obi (Nasarawa State); in the Maastrichtian Gombe Formation at Maiganga (Gombe State) and within the Turonian Lamja Formation at Lamza (Adamawa State). The Maastrichtian coals are sub-bituminous in rank while the Turonian deposits are of high volatile bituminous rank. The deposits at Owukpa, Okaba, Ogboyaga, Omelehu, and Lafia-Obi were selected for study of their energy conversion efficiencies. Local combustion, organic geochemical Leco Carbon/Sulfur and Rock-Eval data were generated on the coals. Combustion studies recording the time it takes same quantities of water to attain boiling point using same quantities of coal show that the Okaba coal is the most efficient with 10.0 mins; followed by Omelehu (11.4 mins), Owukpa (13.2 mins and 25.0 mins) while the Lafia-Obi coal never brought the water to boiling point. Leco CS shows that higher Corg (TOC) values equivalent to burnable carbon are recorded in the Okaba and Ogboyaga coals. Rock-Eval data show that highest Hydrogen Index (HI) values equivalent to fuel contentsare recorded in the Okaba coals followed successively by Ogboyaga, Omelehu, Owukpa and the least in Lafia-Obi coals. High Oxygen Index (OI) values equivalent to smoke or retardants are recorded in the Ogboyaga coals, followed successively by the Lafia-Obi, Omelehu, Owukpa and the least in Okaba coals. Integrating and combining the results, the coals from Okaba have the best energy conversion efficiency and therefore most efficient for use in smokeless fuel production and electricity generation with little negative impacts on man and the environment. The Ogboyaga, Lafia-Obi and Omelehu coals have too much of retardants and will produce too much smoke. The Owukpa coals, although low on retardants, have insufficient fuel. The Lafia-Obi coals are deficient in fuel and have high retardants in addition to being poorly combustible.