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THE ELECTRICAL, STRUCTURAL AND THERMAL PROPERTIES OF COPPER(II) 4-AMINOBENZOATE AND COPPER(II) 3,5-DINITROBENZOATE

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ABSTRACT
The electrical, structural and thermal properties of copper(II) 4-aminobenzoate and copper(II) 3,5-dinitrobenzoate are reported. The direct current conductivities were analyzed at low ($10 < T(K) < 300$) and at high temperatures ($300 < T(K) < 440$). The Mott's variable range hopping and Arrhenius laws were used as models for the conductivity profiles obtained. The results show that the electronic conduction characteristics of these materials depend on the structure and thermal stability. X-ray powder diffraction, infrared spectroscopy, thermogravimetric analysis and differential scanning calorimetry support the above findings.

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REFERENCES
[1] Joaquin B., Esteruelas M.A., Levelut A.M., Oro L.A., Serrano J.L. and Sola E., *Inorg. Chem.,* **31** (1992) 732-737.
[2] Nukada R., Mori W., Takamizawa S., Mikuriya M., Handa M. and Naono H., *Chem. Lett.*, **5** (1999) 367-368.
[3] Rusjan M., Donnio B., Guillon, D., and Cukiernik F. D., *Chem. Mater.,* **14(4)** (2002) 1564-1575.
[4] Chisholm M.H., Christou G., Folting K., Huffman J.C., James C.A., Samuels J.A., Wesemann J.L. and Woodruff W.H., *Inorg. Chem.*, **35** (1996) 3643-3658.
[5] Ritikos R., Ab. Gani S.M. and Abdullah N., *J. Fiz. Mal*., **23** (2002) 97-99.
[6] Norbani Abdullah, Wan Haliza Abd. Majid, Siti Meriam Ab. Gani and Saadah Abdul Rahman, 1997. *Bulletin of Malaysian Solid State Science & Technology*, **7(2)** (1997) 43.
[7] Silverstein, R.M., *Spectrometric Identification of Organic Compounds*, Sixth Ed. John Wiley & Sons Inc. (1998) 71-109.
[8] Pavia D.L, Lampman G.M. and Kriz G.S**.,** *Introduction to Spectroscopy*, Second Ed., Saunders College Pudlishing, (1996) 14-94.
[9] Deacon G.B. and Phillips R.J., *Coord. Chem. Rev*., **33** (1980) 227-250.
[10] Kawata T., Uekusa H., Ohiba S., Furukawa T., Tokii T., Muto Y. and Kato M., *Acta*

Cryst., **B48** (1992) 253-261.
[11] Attard G.S. and Cullum P.R., *Liq. Cryst.*, **8** (1990) 299-309.
[12] Giroud-Godquin A.M., Latour J.M. and Marchon J.C., *Inorg. Chem.,* **24** (1985) 4452-4454.
[13] Douglas B., McDaniel D. and Alexander J., *Concepts and Models of Inorganic Chemistry*, John Wiley & Sons (1993).
[14] Klug H.P. and Alexander L.E., *X-ray Diffraction Procedures for Polycrystalline and Amorphous Materials*, John Wiley and Sons Inc. (1985).
[15] Mounir M., Darwish K.A., El-Ansary A.L. and Hassib H.B., *Thermochimica Acta*., **114** (1987) 257-263.
[16] Keller H.J., Low Dimensional Cooperative Phenomena, Plenum Press, New York, (1975).
[17] Wang A.H., Javadi H.S., Ray A., MacDiarmid A.G. and Epstein A.J., *Phys. Rev. B*, **42** (1990) 5411-5414.
[18] Gosh M., Barman A., Meikap A.K., De S.K. and Chatterjee S., *Phys. Lett. A*, **260** (1996) 138-148.
[19] Mott N.F., *Metal-Insulator Transitions*, Taylor & Francis Ltd (1974).
[20] Briers J., Eevers W., Cos. P., Geise H.J., Mertens R., Nagel P., Zhang X.B., Van Tendeloo G., Herrebot W. and Van der Veken B., *Polymer*, **35** (1994) 4569.
[21] Brodsky M.H., *Amorphous Semiconductors*, Springer-Verlag Berlin Heidelberg (1979).