

EMISSION OF INTERMEDIATE MASS FRAGMENTS USING γ -SPECTROSCOPIC TECHNIQUES¹

J. Gómez del Campo, C. Baktash, H.-Q. Jin,² D. Rudolph,³ A. D'onofrio,⁴ F. Terrasi,⁵ G. de Angelis,⁶ M. De Poli,⁶ C. Fahlander,⁶ A. Gadea,⁶ D. R. Napoli,⁶ Q. Pan,⁶ P. Spolaore,⁶ L. De Acuna,⁶ D. Bazzacco,⁷ S. Lunardi,⁷ P. Pavan,⁷ C. Rossi-Alvarez,⁷ A. Buscemi,⁷ R. Zanon,⁷ A. De Rosa,⁸ L. Campojola,⁸ M. La Commara,⁸ G. Inglima,⁸ V. Roca,⁸ M. Romano,⁸ M. Sandoli,⁸ M. Romoli,⁹ A. Ordine,⁹ and D. Pierroutsakou⁹

Intermediate Mass Fragments (IMF) and light particles emitted from the $^{58}\text{Ni} + ^{58}\text{Ni}$ reaction at a beam energy of 375 MeV have been studied. The fragments and light particles were measured in coincidence with 4π γ -ray spectrometer. The $Z = 6$ (C) kinetic energy spectra and the distribution of the final nuclei in coincidence with the emitted C are well described by Hauser-Feshbach calculations extended to many channels. A detailed study of C- γ and 3α - γ correlations indicate a strong selectivity of the IMF decay. Our results indicate that the IMF can populate nuclei that are not accessible via multiple light particle ($Z < 3$) emission and, thus, are useful for nuclear structure studies.

¹ Abstract of published paper: Phys. Rev. C, **57** (2), (1998) p. 57.

² Present address: NASA Ames Research Center, M/S T272A-1, Mooresfield, CA 94035-1000.

³ Present address: Sektion Physik der Universität München, D-85748 Garching, Germany.

⁴ Dipartimento di Scienze Fisiche "E. R. Caianiello," Università di Salerno, and INFN-Gruppo Collegato di Salerno, via S. Allende, 84081 Baronissi, Salerno, Italy.

⁵ Dipartimento di Scienze Ambientali, Seconda Università di Napoli, via Arena 22, 81100 Caserta and INFN, Sezione di Napoli, Napoli, Italy.

⁶ INFN, Laboratori Nazionali di Legnaro, Legnaro, Italy.

⁷ Dipartimento di Fisica dell'Università di Padova and INFN Sezione di Padova, Padova, Italy.

⁸ Dipartimento di Scienze Fisiche, Università, Federico II, Pad. 20 Mostra d'Oltremare, 80125 Napoli and INFN, Sezione di Napoli, Napoli, Italy.

⁹ INFN, Sezione di Napoli, Pad. 20 Mostra d'Oltremare, 80125 Napoli, Italy.