

# **A novel dual-action plant fertilizer and urease inhibitor: the urea·catechol co-crystal - characterization and environmental reactivity**

Lucia Casali,<sup>a</sup> Luca Mazzei,<sup>b</sup> Oleksii Shemchuk,<sup>a</sup> Lohit Sharma,<sup>c</sup> Kenneth Honer,<sup>c</sup> Fabrizia Grepioni,<sup>a\*</sup> Stefano Ciurli,<sup>b\*</sup> Dario Braga<sup>a</sup> and Jonas Baltrusaitis<sup>c\*</sup>

<sup>a</sup> Dipartimento di Chimica “G. Ciamician”, University of Bologna, Via Selmi, 2 – 40126 Bologna – Italy.

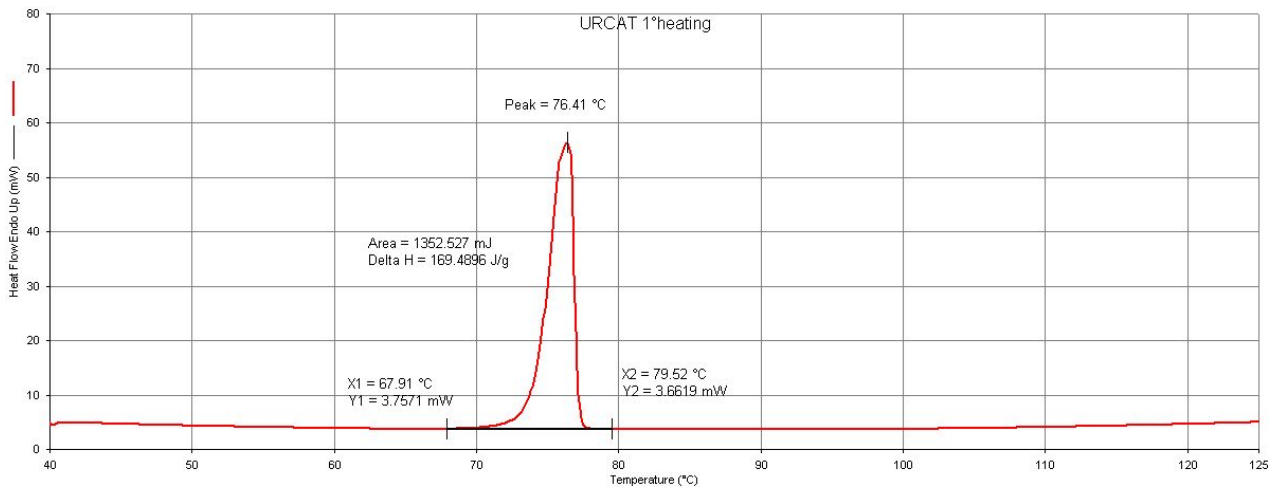
<sup>b</sup> Laboratory of Bioinorganic Chemistry, Department of Pharmacy and Biotechnology, University of Bologna, Viale Giuseppe Fanin 40, 40127 Bologna, Italy

<sup>c</sup> Department of Chemical and Biomolecular Engineering, Lehigh University, 111 Research drive, Bethlehem, PA 18015, USA

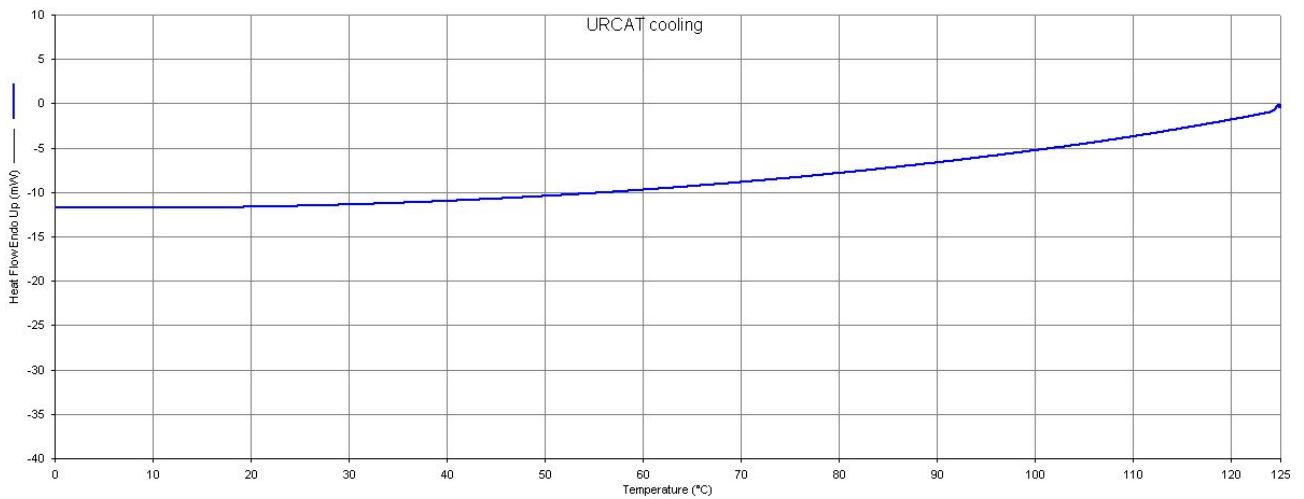
number of pages – 4,

number of figures – 5,

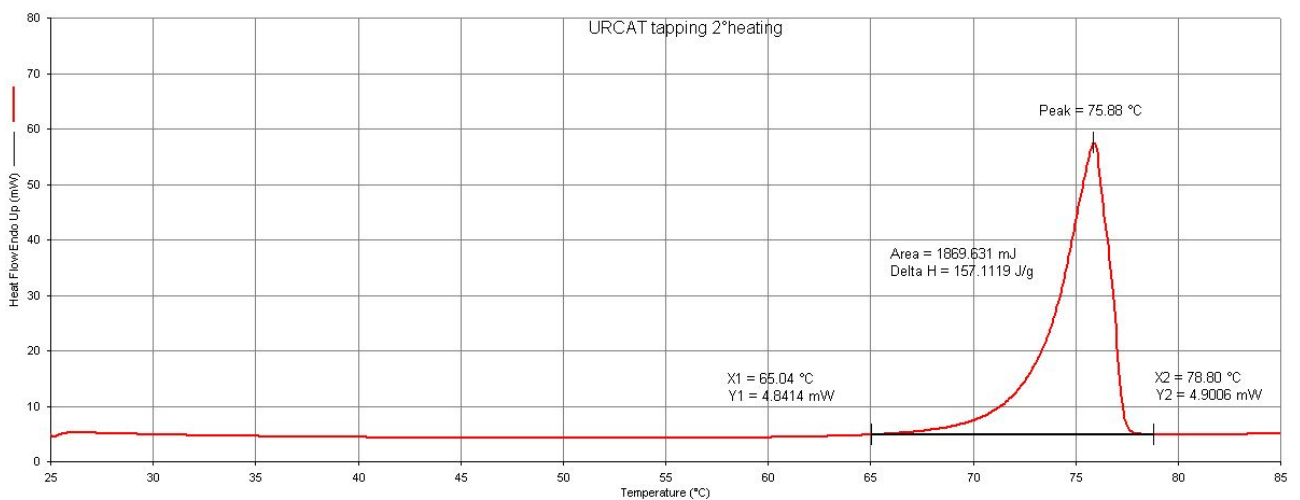
number of tables – 1.



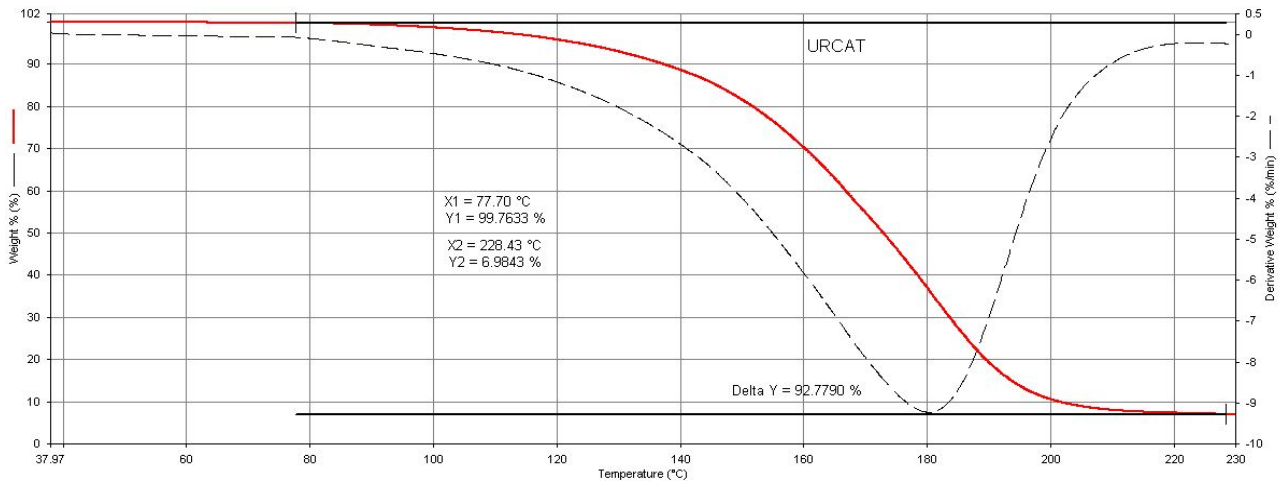
**Fig. S1:** DSC trace for URCAT (1st heating).



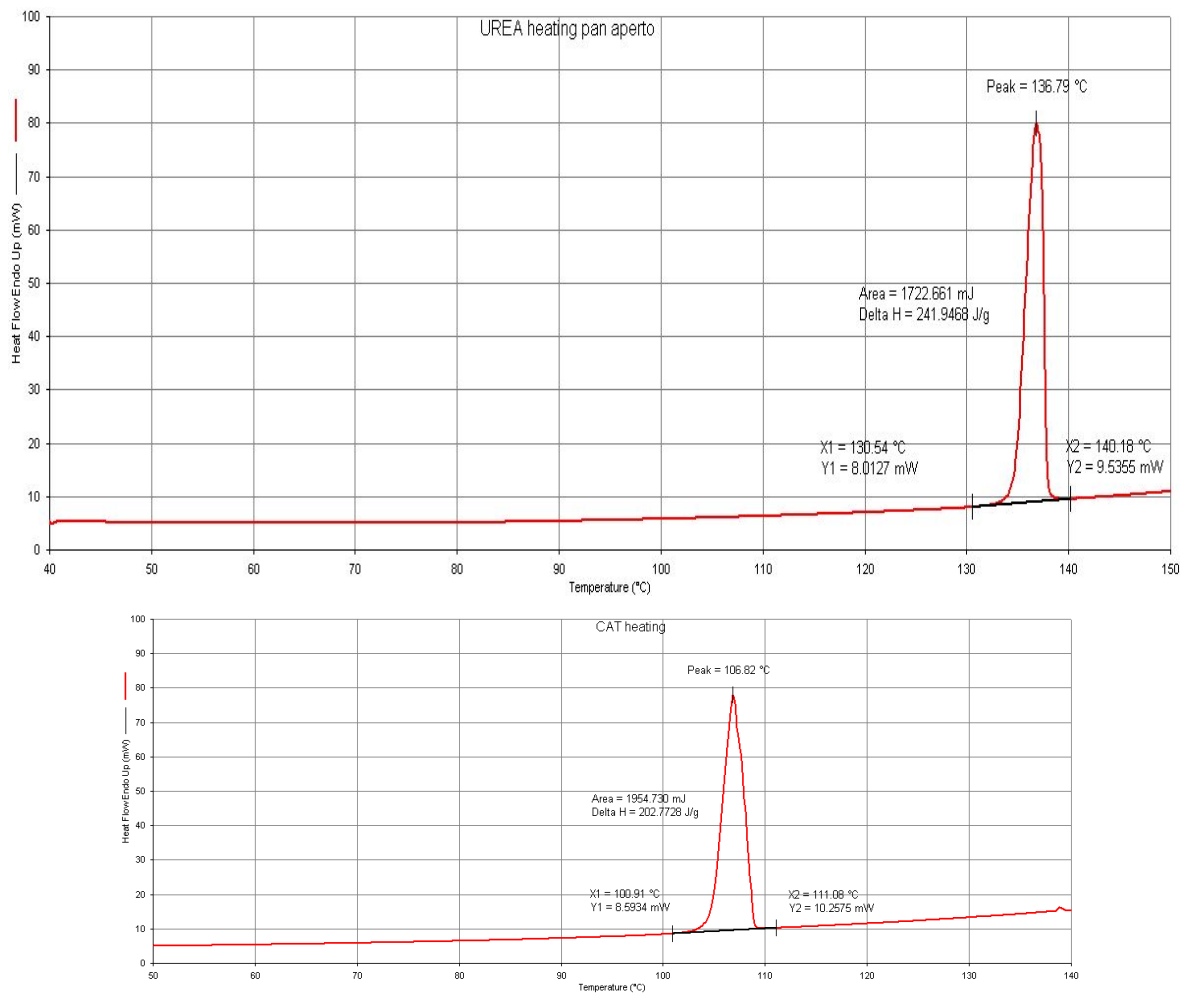
**Fig. S2:** DSC trace for the urea-catechol co-crystal (URCAT, 1st cooling).



**Fig. S3:** DSC trace for URCAT (2nd heating). The melting point corresponds to the one observed for URCAT.



**Fig.S4:** TGA trace for URCAT.



**Fig. S5:** DSC traces for urea (top) and catechol (bottom) used for the synthesis of URCAT.

**Table S1.** Crystal data and details of measurement for URCAT.

Chemical formula	CH <sub>4</sub> N <sub>2</sub> O·C <sub>6</sub> H <sub>6</sub> O <sub>2</sub>
M <sub>r</sub> , g mol <sup>-1</sup>	170.17
T / K	293 (2)
Morphology, colour	Plate, colourless
Crystal system	Monoclinic
Space group	<i>P</i> 2 <sub>1</sub> / <i>c</i>
<i>a</i> / Å	7.1751 (4)
<i>b</i> / Å	6.2509 (4)
<i>c</i> / Å	19.2212 (16)
α / °	90
β / °	97.888 (7)
γ / °	90
<i>V</i> / Å <sup>3</sup>	853.93 (10)
<i>Z</i>	4
<i>d</i> / g cm <sup>-3</sup>	1.324
μ / mm <sup>-1</sup>	0.11
Measd reflns	3897
Indep reflns	1976
Reflns with <i>I</i> > 2σ( <i>I</i> )	1255
R <sub>int</sub>	0.028
<i>R</i> [ <i>F</i> <sup>2</sup> > 2σ( <i>F</i> <sup>2</sup> )]	0.062
<i>wR</i> ( <i>F</i> <sup>2</sup> )	0.182

Crystal data can be obtained free of charge from the Cambridge Crystallographic Data Centre via <https://www.ccdc.cam.ac.uk> and have been allocated the accession number CCDC 1880413.