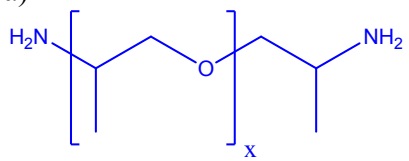
Electronic Supplementary Information

Influence of the Degree of Polymerization and of the Architecture on the Elastic Properties of New Polyurea Elastomers

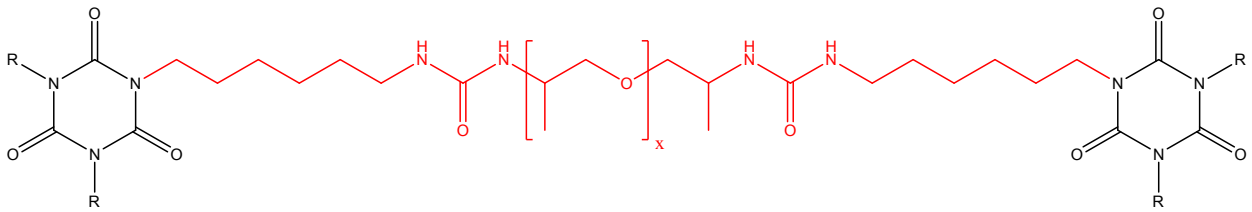
Antoni Sánchez-Ferrer,*‡[a] Daniel Rogez,[b] Philippe Martinoty*[b]

[a] *Institute of Supramolecular Science and Engineering, University Louis Pasteur, 8 allée Gaspard Monge, F-67083, Strasbourg, France; E-mail: a.sanchez-ferrer@isis.u-strasbg.fr*
[b] *Institute Charles Sadron, UPR 22 CNRS, 23 rue du Loess, F-67034, Strasbourg Cedex, France; E-mail: philippe.martinoty@ics-cnrs.unistra.fr*
‡ Present address: Department of Health Sciences and Technology, ETH Zurich, Schmelzbergstrasse 9, CH-8092, Zurich, Switzerland; E-mail: antoni.sanchez@hest.ethz.ch

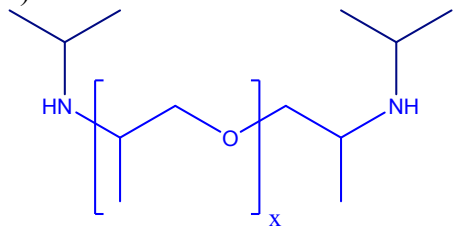
a)



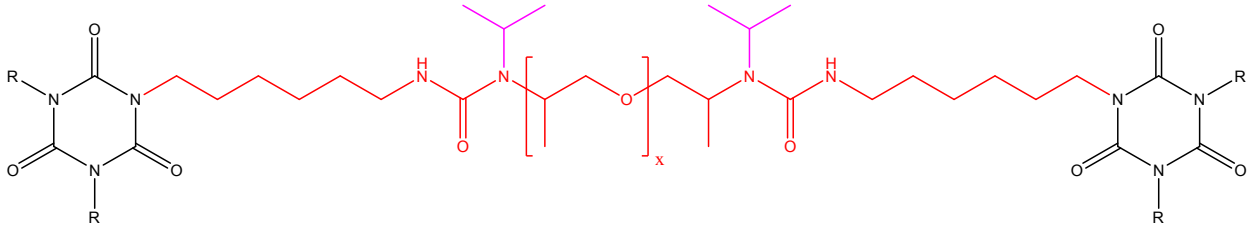
ED-400, *DP* = x = 6
ED-2000, *DP* = x = 33
ED-4000, *DP* = x = 68



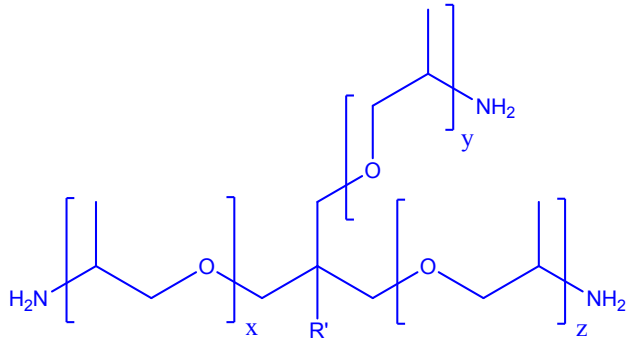
b)



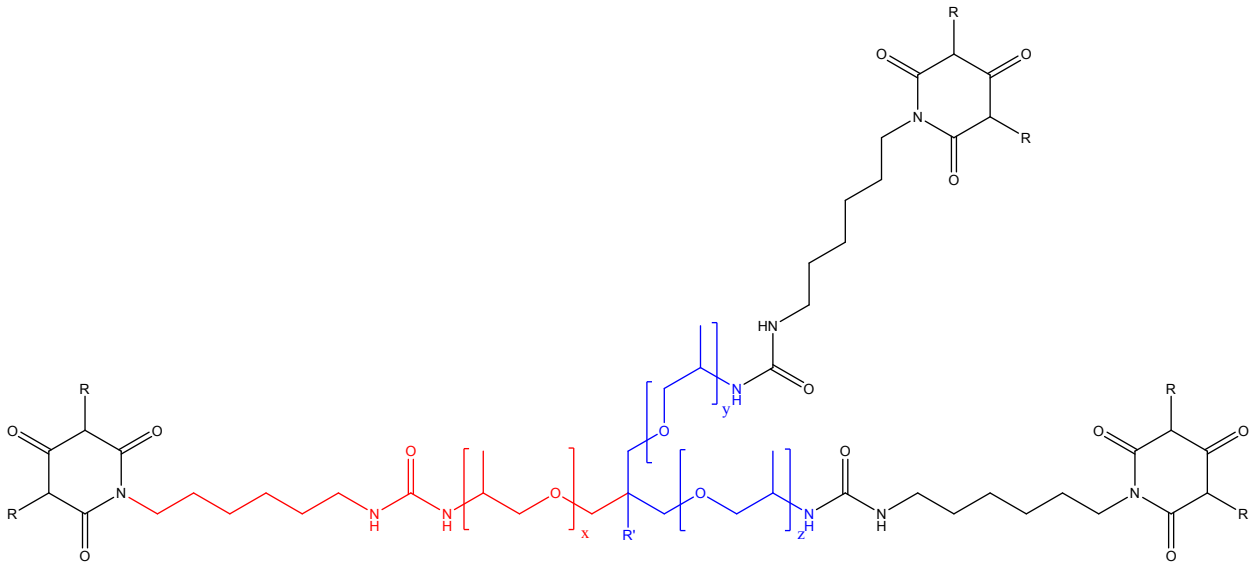
ESD-2001, *DP* = x = 33



c)

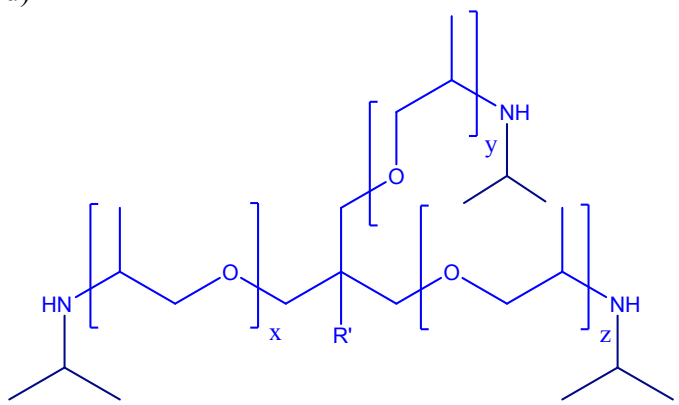


ET-403, *DP* = x+y+z = 6, R' = CH_3CH_2
ET-3000, *DP* = x+y+z = 50, R' = H
ET-5000, *DP* = x+y+z = 85, R' = H



d)

EST-404, *DP* = x+y+z = 6, R' = CH_3CH_2



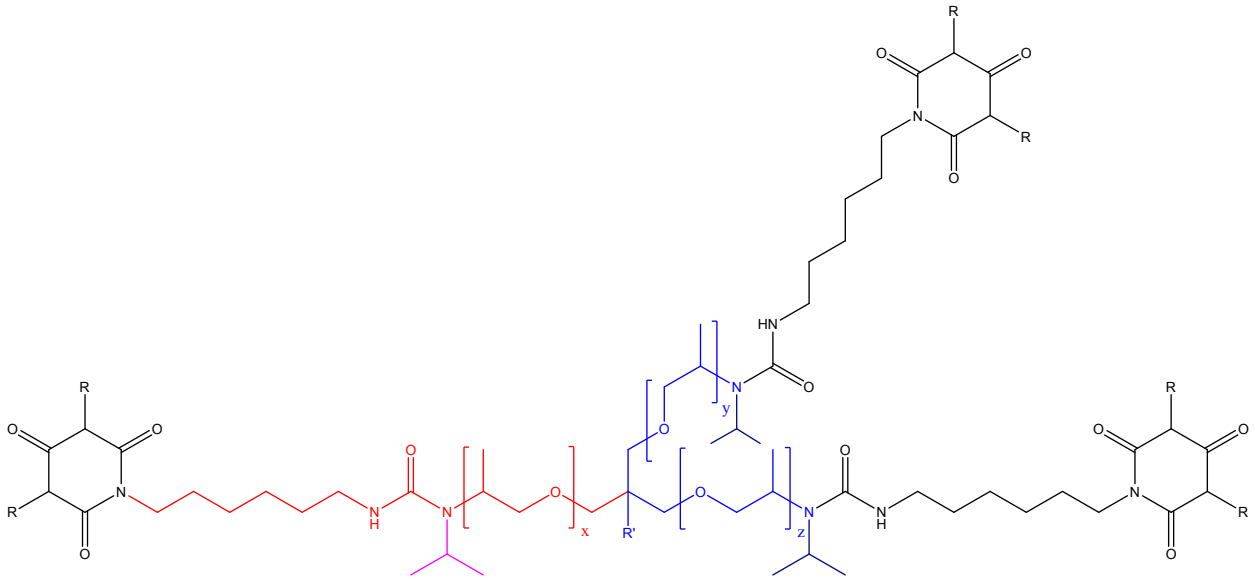


Fig. ESI-1 Chemical structures of all polyetheramines (top) and their corresponding crosslinked structure (bottom): a) primary diamino-terminated polyetheramines ED-400, ED-2000 and ED-4000; b) secondary diamino-terminated polyetheramine ESD-2001; c) primary triamino-terminated polyetheramines ET-403, ED-3000 and ET-5000; d) secondary triamino-terminated polyetheramine EST-404. Note: In blue the polyetheramino backbone, in red the segmental molecular weight, in black the isocyanurate crosslinker.

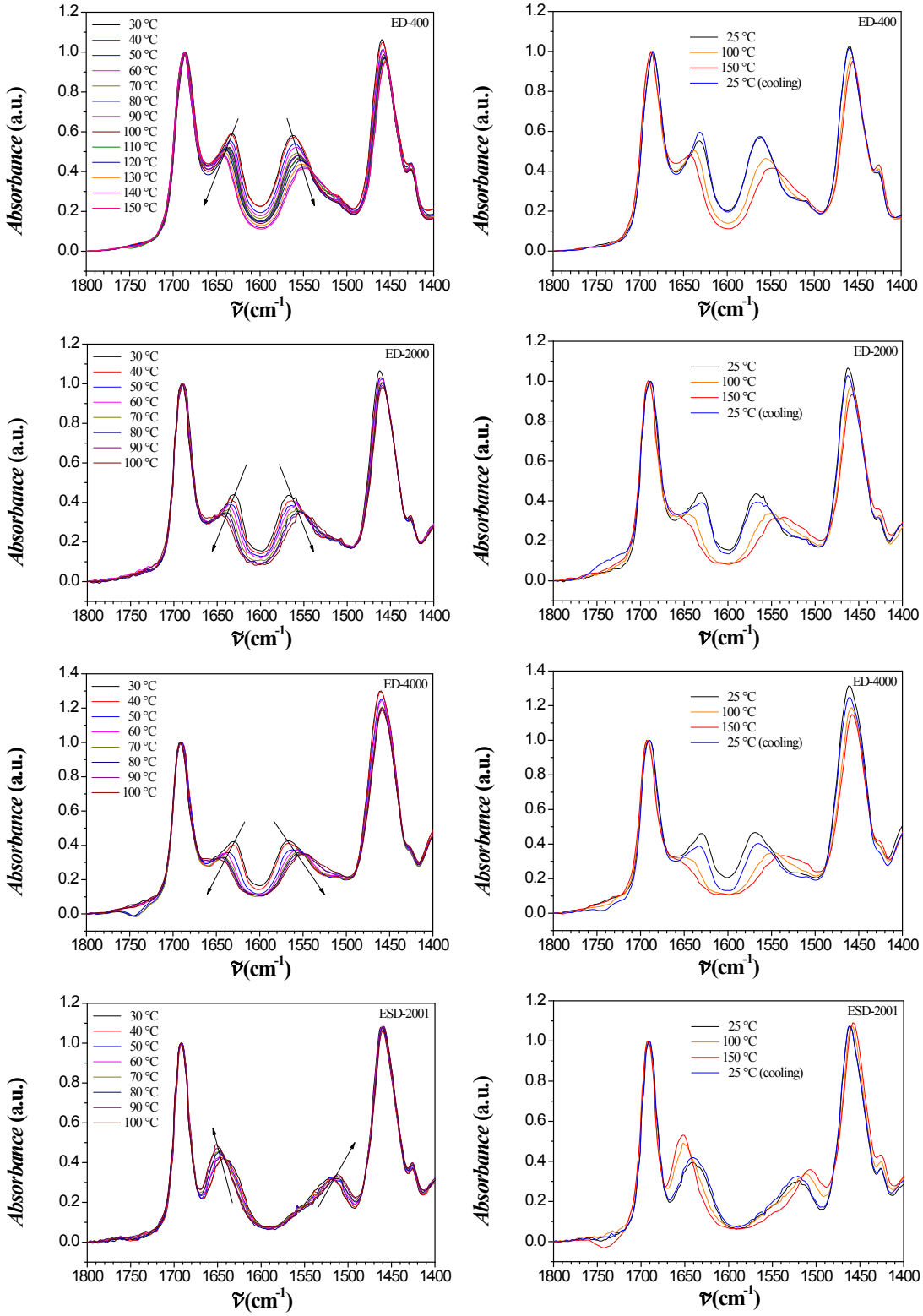


Fig. ESI-2 FTIR spectra evolution upon heating from 25 °C for the elastomers ED-400, ED-2000, ED-4000 and ESD-2001.

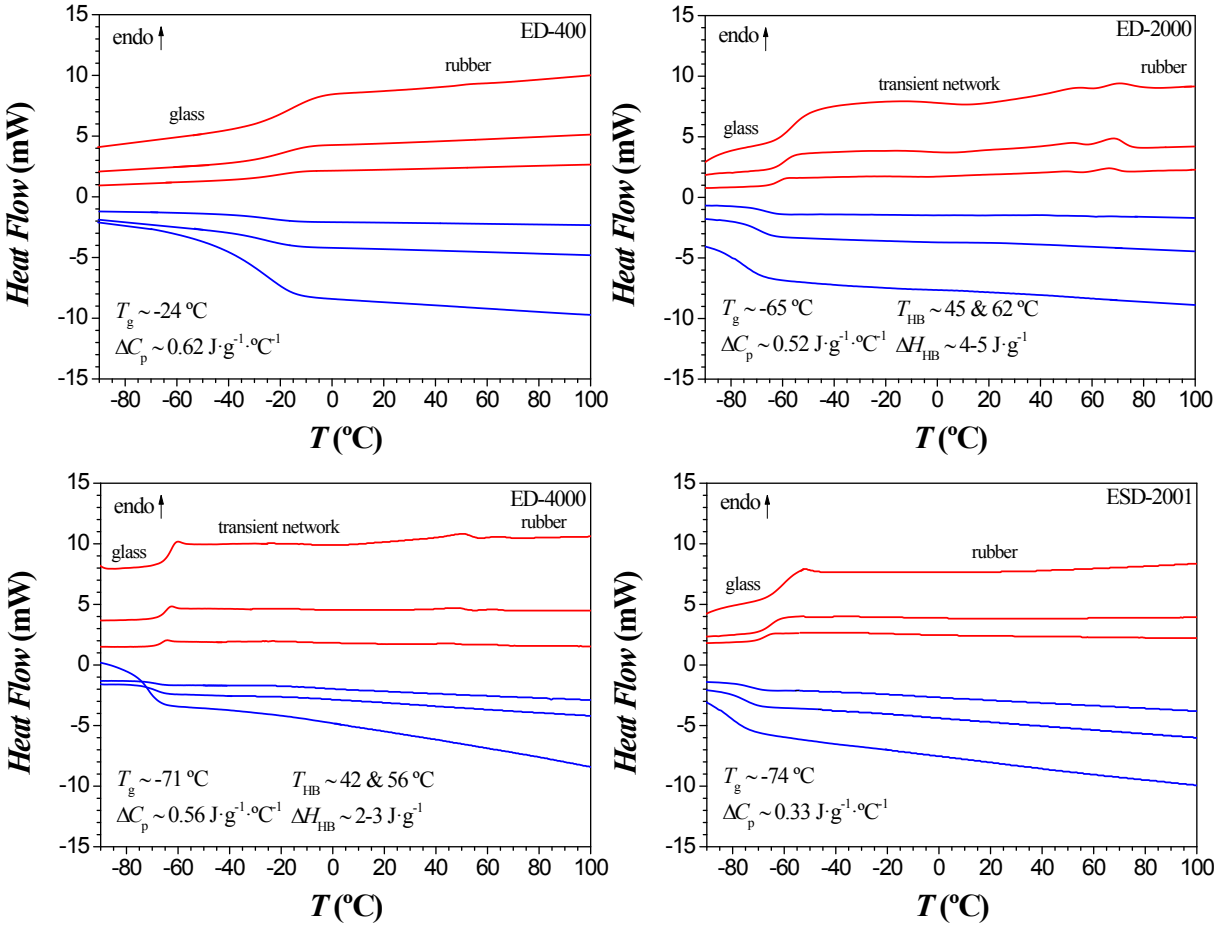


Fig. ESI-3 DSC thermographs for the elastomers ED-400, ED-2000, ED-4000 and ESD-2001, at 5, 10 and 20 K·min^{-1}. Note: in red the heating thermographs, and in blue the cooling thermographs.

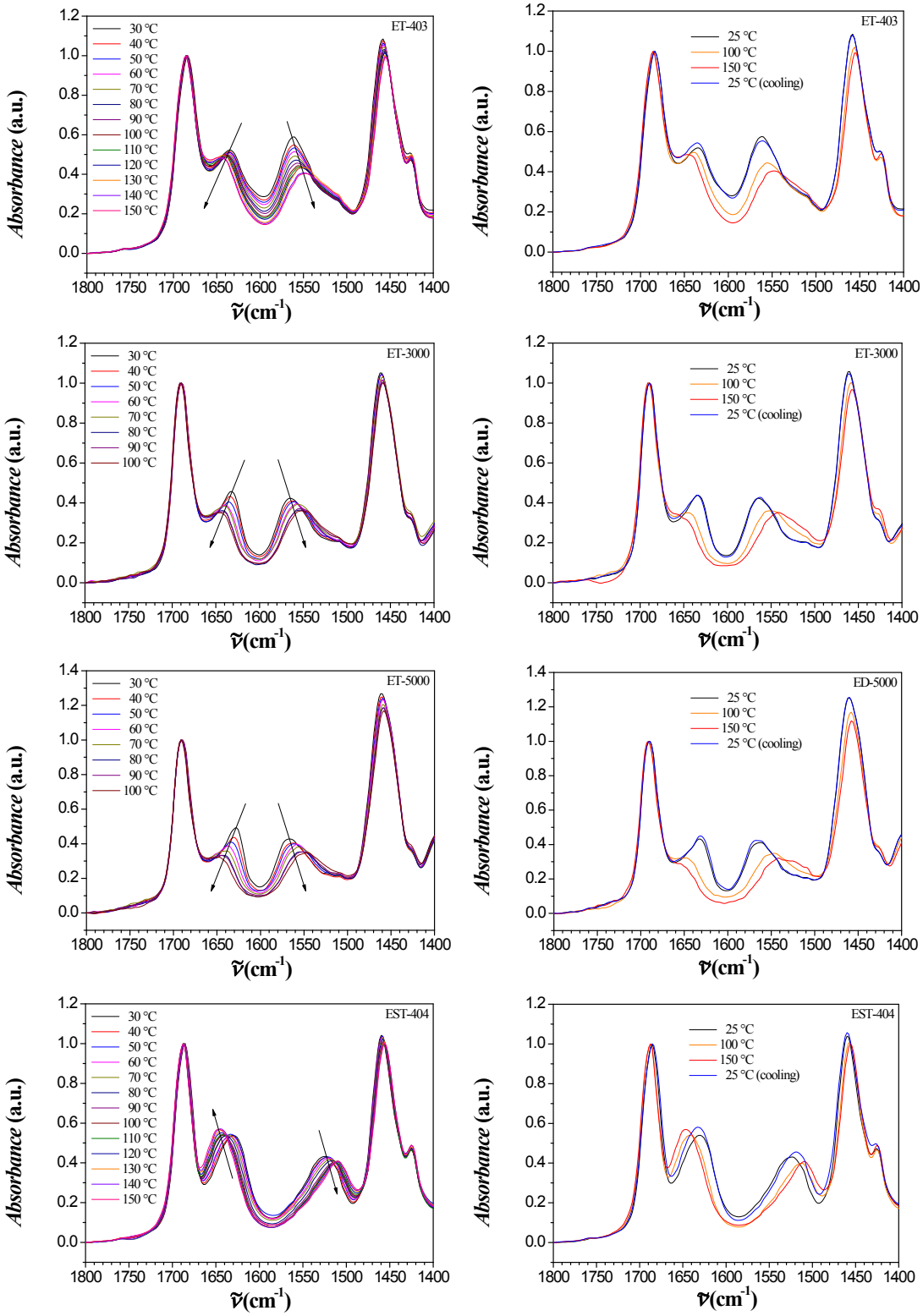


Fig. ESI-4 FTIR spectra evolution upon heating from 25 °C for the elastomers ET-403, ET-3000, ET-5000 and EST-404.

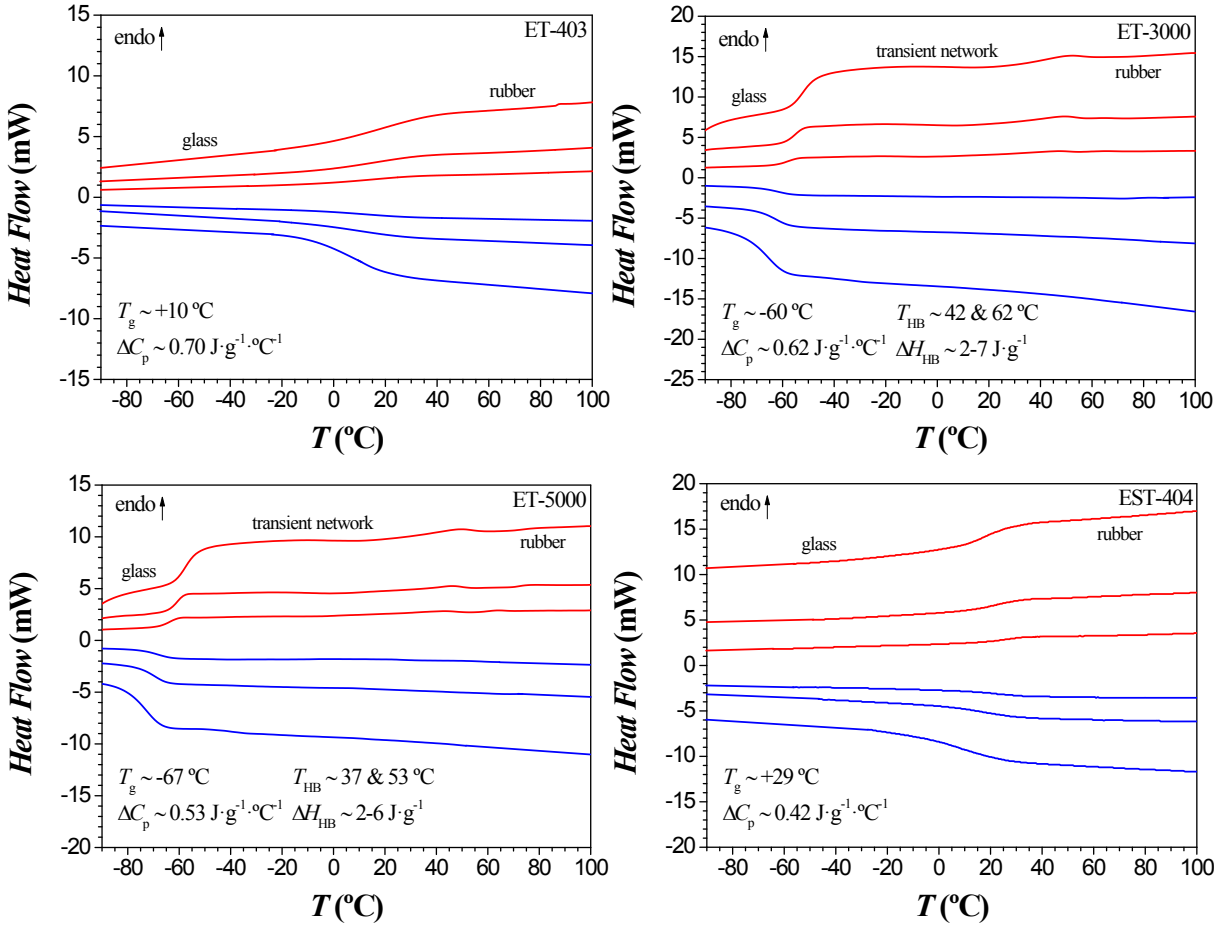
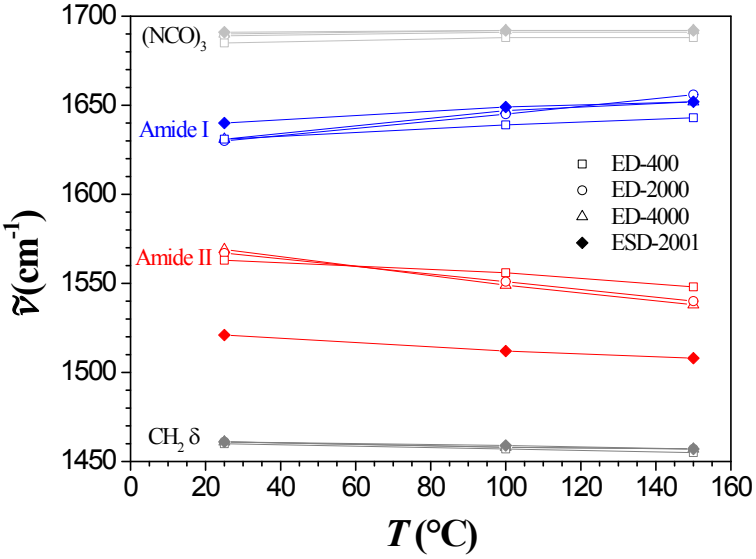


Fig. ESI-5 DSC thermographs for the elastomers ET-403, ET-3000, ET-5000 and EST-404, at 5, 10 and 20 K·min^{-1}. Note: in red the heating thermographs, and in blue the cooling thermographs.

a)



b)

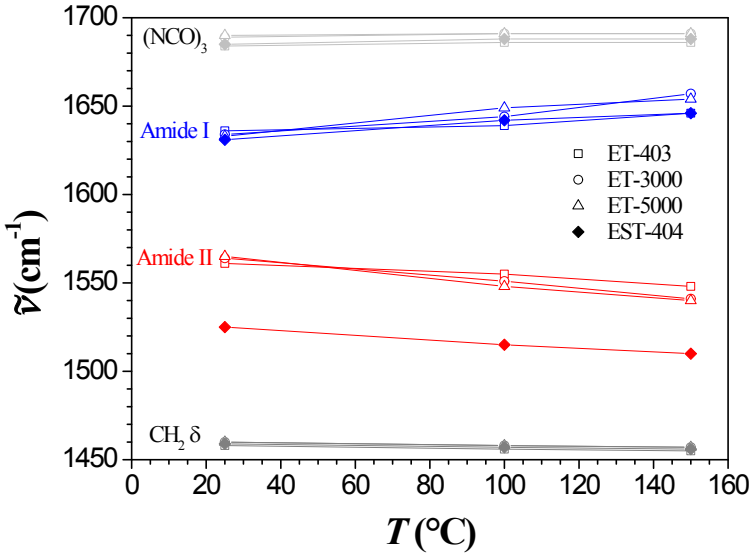


Fig. ESI-6 The absorption FTIR peaks evolution for the elastomers ED-400, ED-2000, ED-4000 and ESD-2001 (left), and the elastomers ET-403, ET-3000, ET-5000 and EST-404 (right). *Note*: isocyanurate $(NCO)_3$ – light grey; amide I (blue); amide II (red); and methylene CH_2 (dark grey).