

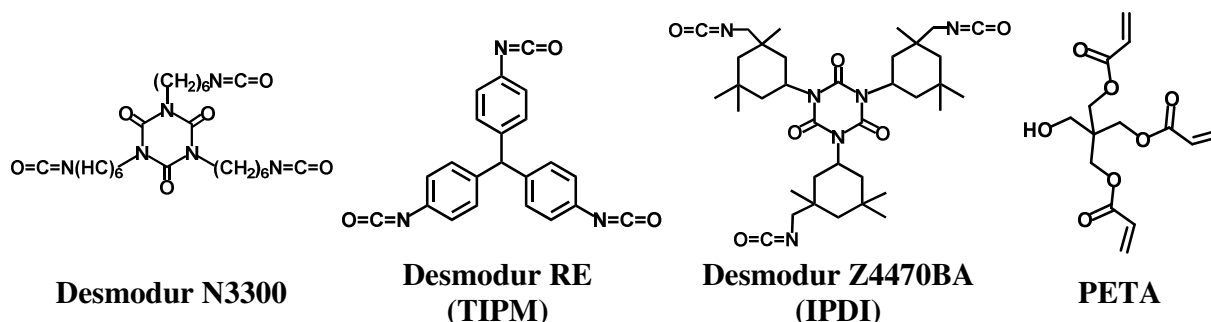
# POLY(URETHANE-ACRYLATE) AEROGELS VIA RADICAL POLYMERIZATION OF DENDRITIC URETHANE-ACRYLATE MONOMERS WITH RIGID VERSUS FLEXIBLE CORES

**Patrina Paraskevopoulou, Maria Papastergiou, Despoina Chriti, Grigorios Raptopoulos**

*Inorganic Chemistry Laboratory, Department of Chemistry, National and Kapodistrian University of Athens, Panepistimiopolis Zografou, 15771 Athens, Greece*

[paraskevopoulou@chem.uoa.gr](mailto:paraskevopoulou@chem.uoa.gr)

Polyurethane and polyacrylate aerogels are two types of materials with numerous and diverse applications. Polyurethane aerogels are produced from the reaction between polyols and polyisocyanates. Polyacrylate aerogels have been synthesized via free radical polymerization of suitable multifunctional acrylate monomers. In this work, we present the synthesis and characterization of synthetic polymer aerogels based on dendritic-type urethane-acrylate monomers. Those monomers were based on: (a) an aromatic/rigid, (b) an aliphatic/flexible, and (c) an aliphatic/rigid core, and were synthesized from the reaction of pentaerythritol triacrylate (PETA), and the corresponding triisocyanates: Desmodur RE (TIPM), Desmodur N3300, and Desmodur Z4470BA (IPDI), respectively. The terminal acrylate groups (3 at the tip of each of the 3 branches) were polymerized *via* a free radical route. The resulting wet-gels were dried with supercritical CO<sub>2</sub>. The resulting aerogels were highly porous (porosity > 80% v/v), with high BET surface areas (>200 m<sup>2</sup> g<sup>-1</sup>) and high thermal stability (>500 °C).



## Acknowledgements

This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 685648. This publication reflects the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained therein. We are also thankful to Covestro and Sartomer Arkema for kindly providing samples of Desmodur N3300, Desmodur RE, Desmodur Z4470BA, and SR444D.