

9704201-4



PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : C09K 3/18, A01N 1/02, A01G 13/00, A23L 3/37, A61K 39/00, C07H 21/00, C07K 2/00, C08B 37/00, C07G 17/00	A1	(11) International Publication Number: WO 96/30459 (43) International Publication Date: 3 October 1996 (03.10.96)
(21) International Application Number: PCT/US96/04284 (22) International Filing Date: 1 April 1996 (01.04.96) (30) Priority Data: 08/413,370 30 March 1995 (30.03.95) US 08/485,185 7 June 1995 (07.06.95) US (71) Applicants: ORGAN, INC. [US/US]; 1510 West Montana Street, Chicago, IL 60614-2013 (US). LIFE RESUSCITATION TECHNOLOGIES, INC. [US/US]; 1510 West Montana Street, Chicago, IL 60614-2013 (US). (72) Inventor: FAHY, Gregory, M.; 20220 Gentle Way, Gaithersburg, MD 20879 (US). (74) Agents: OLIFF, James, A. et al.; Oliff & Berridge, P.O. Box 19928, Alexandria, VA 22320 (US).		(81) Designated States: AU, CA, CN, JP, KR, SG, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>

(54) Title: NOVEL ICE-CONTROLLING MOLECULES AND THEIR APPLICATIONS**(57) Abstract**

A dispersal pattern of hydrogen bonding sites on an ice surface is used as a template in a process for the design, selection and manufacture of synthetic ice interface dopants. Ice interface dopants are molecules which when bound to a surface of an ice crystal inhibit the incorporation of additional water molecules into the crystal. The ice interface dopants thus inhibit ice crystal growth, recrystallization, and sublimation. Ice interface dopants can also inhibit heterogenous nucleating agents, and thus postpone or prevent ice nucleation. Exemplary dopant structures are provided that achieve near-perfect ice-bonding efficiency while being thoroughly adaptable to a wide variety of specialized ice-bonding applications. Orbital steering provides for steering lone pair orbitals of ice-bonding atoms in the interface dopant to result in an optimal angular alignment with the complementary binding sites on ice.

NO COVERING PAGE