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### Surface Modification of Silicon rubber by Ion-Assisted Reaction

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Surface modification of silicon rubber was performed to improve wettability by ion-assisted reaction using  $\text{Ar}^+$  ion irradiation in oxygen environment. Ion dose ranged from  $1 \times 10^{15}$  to  $1 \times 10^{17}$  ions/cm<sup>2</sup> and oxygen flow rate was also varied from 0 to 6 ml/min. Contact angles of water to silicon rubber were measured by Goniotype ERMA-Contact Anglemeter. The contact angle was reduced from 120° to 27° by  $\text{Ar}^+$  ion irradiation only without oxygen gas, but largely decreased to 16° by  $\text{Ar}^+$  ion irradiation with 6 ml/min. In  $\text{Ar}^+$  ion irradiation only, surface energy of silicon rubber was slightly increased to ion dose of  $1 \times 10^{16}$  ions/cm<sup>2</sup> and significantly increased at  $1 \times 10^{17}$  ions/cm<sup>2</sup>. The surface energy of silicon rubber was increased as a function of ion dose. The decrease of contact angle and increase of surface energy may be due to formation of hydrophilic group by chemical reaction on surface. The newly formed hydrophilic group was identified as C-O and C=O by analysis. Surface morphology of modified silicon rubber was analyzed by atomic force microscopy (AFM).

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