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Proximity Effect in Nb/Cu/CoFe Trilayers KYUNGMOON KIM, JINHO KIM, JUN HYUNG KWON, KOOKRIN CHAR, Center for Strongly Correlated Materials Research, School of Physics, Seoul National University, Seoul, Republic of Korea, HYEONJIN DOH, HAN-YONG CHOI, Department of Physics, Sung Kyun Kwan University, Suwon, Republic of Korea — We have fabricated the Nb/Cu , Nb/CoFe bilayer and Nb/Cu/CoFe trilayer samples by varying the CoFe or Cu layer thickness using DC magnetron sputtering system and measured their superconducting transition temperature Tc. In Nb/Cu(d_{Cu}) and Nb/CoFe(d_{CoFe}) bilayers , we observed Tc behavior consistent with conventional SN and SF theory. In Nb/Cu/CoFe trilayer , as we increase d_{Cu} with fixed values of d_{Nb} and d_{CoFe}, Tc of Nb/Cu(d_{Cu})/CoFe trilayer increased rapidly for $d_{Cu} < 5$ nm and slowly saturated to a limiting value. We analyzed these data using the method based on Usadel formalism and obtained $\gamma_b^N = R_b A/\rho_n \xi_n$[Nb/Cu]=0.41 , $\gamma_b^F = R_b A/\rho_f \xi_f$ [Nb/CoFe] = 0.33, and γ_b^F[Cu/CoFe]=0.35. In our Nb/Cu/CoFe trilayers, as we increased d_{CoFe} with fixed values of d_{Nb} and d_{Cu}, we observed the same dip structure as Nb/CoFe(d_{CoFe}). We will explain our data with interface resistance and its implications.

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